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Michael Cassio

By Lieut.-Colonel Charles Crawford, 10th Infantry

> And what is he?
> Forsooth, a great arithmetician
> One Michael Cassio, a Florentine
> * * * * * * *
> That never set a squadron in the field
> Nor the division of a battle knows
> More than a spinster; unless the bookish theorick
> Wherein the toged consuls can propose
> As masterly as he: mere prattle without practice,
> Is all his soldiership.—*Othello.*

AS a background to the bold and startling features of his Othello, Shakespeare arranges a military drama that is keenly interesting to us today, in that it displays as features of an Italian military system, more than three hundred years old, so many things that are live questions with us today. The play is founded on an Italian story and the mirror is held up to our human nature which does not change with time, country or race.

The curtain goes up on a discussion of promotion by selection. Iago, a trained and experienced soldier with long service to his credit, is at the head of the list, but has been overslaughed by one who is merely a graduate of schools or who, at most, knows his business through study only. Political influence has been used. The military ignorance of civilian legislators is referred to. Mention is made of the tendency of officers to go in debt, and of new soldiers to think that they must drink liquor in order to show themselves men. The evil of drunkenness on guard is staged, and an essential element of the play deals with an attempt on the part of an officer who is a great social success to obtain petticoat influence—to secure the favor of the commanding officer by being attentive to his wife.

In Shakespeare's time, Italy had a military system we now call "mercenary," except when we apply it to our own, when we call it the "volunteer" system. Not the least interesting thing that distinguished Michael Cassio was that he was a "great arithmetician," and Iago refers to it scornfully as an accomplishment of tradesmen, there being in his mind, no doubt, the old dispute as to the value of fortifications and the relation of these and mathematics to the conduct of war.

Up to recent years, the business of an engineer was mainly military, and, with the operations of war conditioned very largely by fortifications of a complicated type, it was natural that mathematics, the rule and guide of all who

handle matériel, should come to be considered the key to soldiership by those who contemplate chiefly the impersonal element of war. The line of reasoning is that war is conducted with machinery and constructions, therefore the greatest machinist and builder is the greatest soldier. To make machinery, to understand how it functions, and to erect structures, a knowledge of mathematics is the first essential accomplishment, therefore the greatest mathematician is the greatest soldier.

Some such argument seems to have been convincing to those who have been responsible for the military system and military education in the United States. The idea prevailed when Colonel Thayer reorganized the Military Academy about one hundred years ago, and has been perpetuated because of the lack of interest in, and discussion of, military matters that has been characteristic of Americans.

The greatest military lesson the United States ever received was furnished by the War of 1812 and, while the fluke of winning New Orleans enabled ignorance again to raise its voice about the mobile army, after the war there was no doubt in the minds of the people as to the need of something to prevent incursions of warships and naval raids. They turned to fortifications and, when Colonel Thayer reorganized the Military Academy, it was with the idea of providing men trained in those natural sciences needed in building these forts and making the guns to arm them. Therefore everything about the institution was made secondary to mathematics, pure and applied. Mathematics was not only the basis of the course, but the greater part of the superstructure.

Were the Academy designed to produce men whose only occupation is to handle matériel, there would even now be no question as to the correctness of this view. However, before Colonel Thayer's time, it had not been intended that West Point should be exclusively an engineer school, nor has any engineer of late years been known to wish to make it so. Rather, graduates have tried to justify the curriculum by the records of graduates and sometimes by reasoning. In the meanwhile, the Academy has continued to educate from the point of view that the officers coming from its doors are to work with matériel and, if there are any whose lifework is to be the handling of personnel, that these will occupy a subordinate position and are to be graduated as a by-product only.

When West Point was established the country was in a crude state educationally. The mass of the people were backwoodsmen and technical knowledge was neither necessary nor demanded. In few schools was it possible for a student to get sufficient instruction to enable him to become an accurate surveyor of land. In civil life, there were no engineers from whom the country could obtain technical talent when war came.

The establishment of such a school of mathematics and engineering as West Point came at an opportune period and gave great impulse to such education in this country, where graduates of West Point became eminent in the engineering development which followed as a result of the birth and growth of steam power.

The century that has since passed has seen great changes. From a nation of farmers, we have become an industrial people, engaged in handling machinery in our daily life. We have developed a

great number of technical schools which are thronged with students of engineering. It is estimated that each year about three thousand students are graduated from the different engineering courses of the schools of the country, which number is about one-third of those who matriculate.

These six thousand non-graduates no doubt get considerable engineering theory and, probably, most of them devote themselves to engineering practice. Moreover, we develop out of our industrial life a very numerous body of men, such as Eads, Edison, Ericsson, and the Maxims, who attain engineering skill without the aid of schools of technology; so should West Point cease to exist, the country would not lack technical help in war. By bringing into service men engaged in engineering practice in their daily life, a military, technical corps could be organized and made reasonably efficient more quickly and more easily than any other class of troops in our army.

There are hundreds of thousands of men who have passed their apprenticeship and are working every day on railroad construction, maintenance and operation; at mining and the electrical trades; while map makers and road builders can be found in large numbers among our people. Such men need little more than organization to enable them to perform fair military service in their specialties.

Meanwhile, compared with the other parts of a soldier's profession, military engineering has become relatively simplified. The complex fortifications of Vauban, Choumara and Brialmont, whose study made the engineer most important, have been resolved into matters of trench construction. Pontoon bridging is almost alone in retaining its former characteristics and in being an unknown art to the civilian.

Except in permanent fortications or in fortifications prepared long in advance, the Infantry plans and constructs the field works that it will occupy.—*Infantry Drill Regulations.*

It therefore appears that knowledge and skill in military field engineering are no longer the exclusive accomplishments of a few highly-trained individuals, but are elements of the ordinary training of all kinds of troops.

One hundred years ago there was a great need in the United States for an institution that could develop a trained engineer, and the course at the Military Academy was at that time admirably suited to that end. The development of educational institutions of a technical character in this country, together with the evolution of modern military practice, has changed the situation in a marked manner, and there is now a feeling in the Army that the course at West Point is not at present the one best suited to the Army's needs.

Among the arguments that have been put forth, justifying or defending the curriculum at the Military Academy, the following are two:

First. That by educating a man to be an engineer, he is sufficiently instructed for his work in all other official capacities.

Second. That training in mathematics strengthens the brain-power so that the mind is thereby broadened and made more capable of solving problems, of any character whatever, with which an officer may be confronted. The second argument probably includes the first, the latter being presented as the result of an inquiry instituted by Congress in 1860, when a Commission with Jefferson Davis as its chairman, was appointed to

" examine into the organization, system of discipline, and course of instruction of the United States Military Academy, with a view to ascertain what modifications or changes, if any, are desirable in order that the Academy shall best accomplish the objects of its establishment."

The report of the Commission (Senate Miscellaneous Document No. 3, 36th Congress, 2nd Session) was completed December 13th, 1860, but it would seem that the approaching Civil War caused its printing to be deferred until 1881. In this report, an historical sketch of the Academy is included, after which is the following statement:

The varied duties imposed upon officers of the Army of the United States, in every corps and arm of the service, demand of each, in the usual routine of service, performance of the ordinary duties of all corps. The peculiar character of our military system, retaining in time of peace a body of well instructed officers and men, that can, upon the occurrence of war, disseminate military knowledge and discipline among large bodies of hastily assembled and undisciplined troops, the staff of which must be principally formed from officers of the permanent Army, renders it necessary that officers, whether of infantry, mounted corps, artillery, or engineers, should receive the theoretical, applied, and practical instruction of engineers.

The result of the consideration of the curriculum by the Commission was:

No material reduction of subject or time can be made in the mathematical and scientific studies and their application to the art of war, if we are to keep pace with the advance of science; and the Commission cannot recommend a reduction of the standard of military education at the moment when many of the great States of Europe, profiting by experience, are endeavoring to raise it.

It is not believed that the position taken by the Commission—that the graduated cadet can take upon himself the duties of all corps—will be admitted by any of the auxiliary arms and, least of all, by the Infantry, where it is felt that not only must the graduate learn much that he can hardly be expected to learn at the Academy, but that a good deal of the spectacular and ornamental work given him is positively harmful to him since it gives him an erroneous view of Infantry that must be corrected before he can fulfill his mission.

That the study of mathematics is a developer of intellectual power in all fields in which the mind is exercised, is not a new belief. Reference to this theory is contained in the Report of the Congressional Committee on Military Affairs in 1834, where it is stated:

Mathematics is the study which forms the foundation of the course (at the Military Academy). This is necessary, both to impart to the mind that combined strength and versatility, the peculiar vigor and rapidity of comparison, necessary for military action.

The report of the Academic Board in 1843 expressed a like idea in different terms and referred to the course as teaching the cadet to reason accurately. Professor Church in 1860 wrote emphasizing the value of the study of mathematics as a mental training. Professor Bass, in a report in 1896, says:

The study of mathematics develops the reasoning faculties and establishes a mental foundation upon which any branch of knowledge may safely and rapidly be constructed.

In 1913, a committee of the General Staff was directed to make a study of the subject of military education and, among other matters, it considered the course at the Military Academy. Before the study was completed, two pro-

fessors from the Academy were ordered to Washington to consult with the committee and the resulting report was published in General Staff Bulletin No. 1, dated April 4, 1914. The report gave as the primary function of the Military Academy:

First. To so develop the power of analysis that the mind may reason to a logical conclusion.

In what way the Military Academy does this is not stated, but, from the similarity between the wording in this report and of others made in former years, there seems to be little doubt that this development of power is to be accomplished by the study of mathematics.

It is possible that this attitude toward the course in mathematics originated with the illustrious Professor Davies, a professor of mathematics at West Point, a writer of text books on the subject, and a student of the mental philosophy of his day. In a book published in 1850, he writes:

We may claim for the study of mathematics that it impresses the mind with clear and distinct ideas; cultivates habits of close and accurate discrimination; gives to an eminent degree the power of abstraction; sharpens and strengthens all the faculties, and develops to their highest range the reasoning powers. The tendency of this study is to raise the mind from the servile habit of imitation to the dignity of self-reliance and self-action. It arms it with the inherent energies of its own elastic nature, and urges it on the great ocean of thought, to make new discoveries, and enlarge the boundaries of mental effort. It is the drill master of the intellectual faculties —the power best adapted to bring them all in order, to impart strength, and to give them organization.—Davies, *Utilities of Mathematics.*

Later mathematicians have gone as far as to define mathematics as the "science concerned with the logical deduction of consequences from the general premises of all reasoning."

These are great claims for mathematics, coming from very high authorities, but if one is content with a philosophy that "works," with pragmatism, it is believed that he will be able to see how an officer can get along in the world and render valuable service to his country with but little training in this field of science.

It is a subject of controversy about which there is doubtless considerable literature. There will be no disposition to show here a lack of appreciation or the value of the study of mathematics at West Point or a desire to remove it from its hegemony in the curriculum, but it is thought that some of the claims made for it obscure the importance of other matters which are vital to the Army.

Any graduate can reflect upon the performance of his daily duties, and observe the extent to which he uses mathematics. He can estimate how much useful knowledge he obtains by computation; how much by the simple arithmetic in which he was examined upon entering the fourth class; and how much by the higher and applied mathematics. The writer's experience has been that he has but slight use for anything except simple arithmetic and, from what he has observed and heard from other graduates, their experience has been similar.

Students of mental philosophy today favor the view that we learn by experience, and experience is the acquisition of practical acquaintance and efficiency through repeated opportunity and effort —by "practice," as Iago would say, and not through "bookish theorick." Nor are we necessarily doomed to wrong conclusions because we do not take daily exercise in mathematics in order to keep our reasoning powers from becoming

rusty and gummed-up to such an extent that they will not function.

Reasoning to a logical conclusion is a constant mental operation with nearly all men; otherwise, those in the military service, after due deliberation on the part of a board of officers, are sent to St. Elizabeth's.

To be confronted with propositions we cannot reconcile—*i.e.*, with what appears inconsistent, false, contradictory, is apt to be painful; the recognition of truth or logical coherence, on the other hand, is pleasurable.—Ward, *Psychology, Encyclopædia Britannica.*

When it is stated that the function of the Military Academy is to develop the powers of anlysis, so that the mind may reason to a logical conclusion, one cannot help asking, "About what?" We go over the course and find it founded on, and consisting principally of, mathematics. There is no doubt that the graduate can reason to a logical conclusion about mathematical subjects and this means much, for by it we work with things, with matériel, with mathematics for our light and guide.

The idea of quantity is one of the most important in psychology. It is an instrument by which man becomes lord of nature. Man divides and conquers—that is to say he enumerates and measures, and adapts his means to the work to be accomplished, all by the aid of quantity.—Harris, *Psychologic Foundations of Education.*

In as far as it fits the officer for work in handling matériel, the predominance of mathematics is justified, but does it help him in other fields:

The conduct of war is not making powder and cannon out of a given quantity of charcoal, sulphur, and saltpetre, of copper and tin; the given quantities for the conduct of war are arms in their finished state and their effect.—Clausewitz.

Only a few of our officers are concerned with the construction and design of arms and equipment and with research work requiring applied mathematics. Nine-tenths of us have little to do with such studies. We take the arms and equipment which are furnished and spend our time in learning and in teaching their application. It thus appears that the large majority of graduates spend their lives dealing with persons rather than things. In this work, mathematics does not enter, nor is the mathematical habit of thought of any particular value.

It is admitted that the study of mathematics teaches reasoning to a logical conclusion as long as the subject-matter of the reasoning is mathematical. However, when we pass to other subject-matter of thought; when the idea is no longer one of quantity to which equations can be applied; then mathematics is of little or no assistance, and a mathematician's mind reasons as illogically as another. At least one modern psychologist takes this view:

One of the quarrels of educational enthusiasts concerns the extent to which special forms of training improve the general capacities of the mind. A change in one function alters any other in so far as the two functions have factors in common.—Thorndyke, *Educational Psychology,* p. 362.

The notions of mental machinery which, being improved for one set of data, held the improvement equally for all sorts of magic powers; which being trained by exercise of one sort to high efficiency, held that efficiency whatever they might be exercised upon; and of the mind as a reservoir of potential energy which could be filled by one activity and drawn on for any other—have now disappeared from expert writings on psychology.—Thorndyke.

That algebraic or geometric reasoning is of no particular value to the individual when the reasoning powers are exercised on other matters, is demonstrated every year when the Third class takes up Descriptive Geometry. The mental machinery brought into play in the study of this subject is wholly different from that in which the algebraic or geometric notation is used. Descriptive Geometry is pure imagination of lines, surfaces and points in space, and while the work is going on in this subject all previous relative gradings are disarranged.

At this point, it might be asked why the relation this study bears to the soldier's trade is not pointed out to cadets? Nothing he gets in mathematics is quite as valuable to him, since the mental machinery which he exercises in this study is the same that enables him to know ground or terrain—a combination of planes and curved surfaces, always arranged more or less according to a system. The ability to visualize the ground comprising the theatre of operations is one of the highest accomplishments of the soldier and is referred to by most writers on war. Clausewitz calls it *ortsinn* and he considers it a natural gift. Even though natural and not acquired, this faculty is undoubtedly developed by the study of Descriptive Geometry.

The relation of mathematics to the work of a soldier is probably best illustrated by referring to page 18 of "Technique of Modern Tactics," wherein is an outline for use in making an Estimate on the Situation. This operation is a mental process involving logical and conclusive reasoning in its highest sense, and it may be taken as a typical case. In the proposed analysis, the matters to be reckoned about are grouped into nine headings and fifty-nine subheadings, about only two of which does it appear that mathematical reasoning is in any way concerned. The two subheadings concern the strength of our own forces and those of the enemy, simple arithmetic serving every necessary purpose.

It is believed that it would be more nearly correct to say that, besides giving power to handle matériel, that is, the manufacture of arms, equipment, etc., that the study of mathematics strengthens the will power of the student so that he can fix his attention voluntarily. This power is a most valuable one and the study of mathematics, besides being indispensable to the small number of officers engaged in research in the physical world, is best adapted for developing such a faculty of the will, although a similar development could no doubt be obtained by the hard study of any abstruse subject. Mental philosophy would no doubt serve, and something like the same result could be obtained by applying the mind to the study of anatomy or, possibly, of music.

The excellent teaching of mathematics at West Point insures to every man at graduation the ability to concentrate the attention, a faculty sometimes lost through lack of exercise in after life, so that the mind reverts to the habits of a scatter-brain.

The amount of time in a graduate's official life taken up by his non-mathematical activities very largely preponderates. But growing out of the preponderance of mathematics pure and applied in the course, and to the weight given these subjects, there arises, it is believed, in the minds of cadets an unfortunate point of view, one of which they do not rid themselves easily after graduation, so that it pervades the army

to a certain extent,—a point of view from which the business of soldiering is regarded as a comparatively frivolous calling. Practically, soldiership does not count in class standing, and class standing means almost everything to a cadet. Soldiership is an intangible thing not to be weighed or measured by mathematical formulæ, therefore it is ignored. Now, the difficulties of handling this state of affairs, of rating for soldiership, are appreciated. However, soldiership should be recognized and measures taken to give credit for it if possible.

The infantry features of a cadet's life are particularly unfortunate, since much of what a cadet does as an infantryman belongs to an obsolete stage of infantry development. Reference is had to the dress-parade feature of the training. During the writer's time, this feature was a daily exercise in camp, it came twice daily. A hundred years ago, dress parade was a battle exercise for the infantry. The combat of that day was simulated by dress parade and the body of the troops that was habituated in going through the motions of this ceremony, including the manual of arms, with the greatest precision, needed no other battle training. This system of combat training was devised by Frederick the Great and, being the most advanced form of infantry training of that day, was made a part of the practical course at the foundation of West Point.

We have retained the uniform and the exercise long after their meaning has departed from them. If, instead of an infantry dress parade in which the cadet must put on a uniform grotesquely inappropriate to any useful war activity and go through a meaningless ceremony, he were given a part of an infantry combat exercise, simulating actual conditions, his attitude toward this arm would change; he would come back from it, after wallowing in the dust or crawling through the mud, more unsightly and uncomfortable, perhaps, but with a realization that his time and efforts had been usefully spent on the work of a real soldier, and not, like a comedian, on the mummeries of a spectacular and ornamental show.

The frequency of its repetition and the time devoted to this ceremony, compared with what is really important, helps to give rise to the belief which the Commission of 1860 evidently had—that armies can be organized and trained in a few months, if there are merely a few staff officers furnished who know the "bookish theorick," but who have not become habituated to going through the motions of actual campaign.

The Civil War quickly showed the fallacy of this view, for at first graduates were quite at sea in handling the major operations of that struggle and in organizing and training units larger than a battalion—the largest commands in which they had had experience. It required years to organize divisions, corps, and armies and to train the personnel, so that these groups could operate efficiently.

It is not advocated that the Military Academy be revolutionized. But it is not believed that the institution has accomplished the third function assigned it by the General Staff Committee above referred to, that of bringing "its graduates to the threshold of their profession, properly equipped to pursue the study of it." If, while at West Point, they have acquired erroneous views of their profession, and if they have not been properly instructed as to the character of the subject-matter with which they, as officers, are to work, together

with the methods of handling it, the course is not what it should be. This subject-matter is the man, and the methods are the methods of military training and instruction. In all schools for preparing other kinds of teachers in this country, psychology forms a prominent and indispensable part of the curriculum. A girl is not allowed to teach children in a kindergarten without having devoted considerable time to the study of mental laws; yet a cadet, with practically his whole life to be occupied in shaping the minds of his subordinates in the mould of soldiership, graduates without an insight into the theory of mental processes.

In this, the "bookish theorick" is lacking. This lack would not matter so much if the "practice" with which the cadet is familiar and to which he could recur were correct. However, there is a feeling in the service that the West Point methods are not applicable to the service at large and that an officer who trained his soldiers or allowed them to be trained as a new cadet is trained, would himself be disciplined.

The attitude of the War Department in this matter does not seem to be consistent, for while the yearling-corporal method of handling recruits has always been tolerated, if not favored, at the Academy, they have been condemned when applied to soldiers, as if the mind-stuff in the two cases were quite dissimilar.

Methods of training and instruction are most important; and it may be said that the greatly increased efficiency in the Army, resulting from the influence of the Service Schools during the last twelve years, has not come from the fact that they have seized upon any thing new in the military world, but because of the methods they have found and used. The principles contained in all the translated German books, in accordance with which we have lately been working, were set forth in the excellent epitomé on the Art of War, written by Professor Mercur more than twenty-five years ago for the cadets of his time. Because of the tabloid form in which cadets were given this exposition of the principles of the conduct of war, its effect on their minds may be likened to the effect of the hard, compressed, quinine tablets which the Medical Department gave soldiers during the Santiago campaign—it passed through the system whole, undigested, and left them in about the same state as if the treatment had not been given.

The wish may be expressed that when the cadet has been "brought to the threshold of his profession properly equipped to pursue the study of it," he be trained to regard the business of war as lawyers do the law. Students of jurisprudence reverence the memory of that old Roman who first analyzed the science of the law and divided it into three parts—persons, things and procedure. If such were the case, each part might then be given a weight corresponding to its relative importance: things would be matériel; procedure would be regulations, tactics and strategy; while under the heading of persons, would fall all that relates to leadership, morale, methods of imparting instruction, or pedagogy, training, and that mystery called discipline.

It is not necessary, nor is it possible, that the graduate should have covered much of the ground that lies in the field of his profession; but the ground that he has been over should be so prominent as to give him a glimpse of the whole country in the distance; the roads that have been shown him should lead in

the right direction; and he should have an appreciation of the relative importance of the persons, the things, and the procedure that will enter into the after-life.

It should not be considered strange or presumptuous in those of us who live the after-life if we raise our voice concerning the Military Academy. We appreciate the devotion of the permanent personnel of the Acadmy, which is today as highly distinguished as ever in the past; but ours is the after-life for which the cadet is prepared, and the business of war and the requirements of our life have been changing so rapidly as to bewilder even those who serve all the time with troops and strive their best to keep up with it. So, with the great and growing need of military development in this country, we believe ourselves excusable for thinking that the Academy should be responsive to the changing needs of the Army.

If the writer has taken the stand that the Academy has given engineering too prominent a place in its course, it is not through lack of appreciation of the part played by engineering in modern war. It is believed that engineering won the Civil War, for it is thought that the leaders of the Confederacy had reasoned to a logical conclusion when they decided that they could not be conquered. They had read past history correctly but they did not take into consideration the development of steam engineering in the preceding thirty or forty years; so that when they fought, they struggled, not so much against men and arms, as against the artificially controlled forces of nature—of steam on railroads and on river, and of sea-going ships—against which flesh and blood could not prevail.

Engineering will enter to a greater extent into future wars, but it will be knowledge of the organization and the application of engineering facilities and machinery that will be important to the leaders of troops, not knowledge of the matériel and the technique of its manufacture. The view of the world today is that only nations whose people are engaged largely in industrial or engineering activities, and have these activities organized and trained for war purposes, will survive—West Point is designed in our national economy to furnish those who do the organizing and training.

In the common and high schools throughout the country, a radical change is going on in methods. It is a slogan to " learn by doing " and to avoid learning by memorizing, but at West Point we still rely mainly on the memorizing method in all that concerns the art of war—a procedure that might be likened to teaching mathematics by requiring the student to memorize the theorems and principles without application to examples.

The Roman armies which overran the world were so constantly drilled and exercised that, in the common language, the word for drill came to mean army. In Spanish we have *ejercito*—exercise. Josephus tells us that " with this army the only thing that distinguished the field of exercise from the field of battle was the effusion of blood."

No words ever written contain for us more meaning than these.

Field Fortification

General Principles and Classes of Devices of Field Fortification—Rôle on the Western Front in Europe 1914–16—Use on the Offensive and Defensive—Thicknesses for Defense Against the Fire of Infantry, Artillery and Trench Weapons—Tools for Infantry, Cavalry and Engineers—Conclusions.

PART I.

General Principles and Classes of Devices of Field Fortification.

1. The power of modern armament (rapid fire rifles, automatic rifles, machine guns, field guns, heavy field guns, and trench weapons) requires that troops, both on the offensive and defensive, constantly seek cover in order to avoid heavy losses.

2. A *trench* is a shield that saves losses and increases the immediate defensive and the future offensive power of troops who know how to use it. It permits infantry to halt in safety under fire, in order to continue the advance when a favorable opportunity offers. Under penalty of complete destruction, it is absolutely necessary for attacking troops to shelter themselves when under fire, and to fortify, step by step, the ground won. Troops that cannot reach the enemy by an uninterrupted advance, are enabled to stop and prepare for the next advance by means of the fortification of the terrain.

3. Field fortification likewise enables the offensive to engage the enemy, to hold him on one part of the front so as to concentrate forces and reserves, and strike him at another part of the front.

4. The passive defense should be avoided. When troops have once dug themselves in, or organized supporting points, required by the tactical conditions existing, they must profit by their work and carry out the mission assigned them, by coördinating the action of the intrenched units with that of the units intended for the counter attack, which are protected by the natural features of the terrain.

5. This preparation for an attack which may last weeks and months does not bring about immobility, but permits an economy of forces in certain places, and a concentration of strength in others, with a view to sudden and decisive action.

6. The soldier properly instructed, disciplined, led and imbued with the principle that the offensive dominates all the actions of war and that it is the indispensable condition of success, will not hesitate any more to quit the trench than he would to leave a furrow or a road-side ditch in order to advance when ordered by his chief. Napoleon said: "The trench is always useful, never harmful, when it is properly understood. To argue that victory belongs to the one who marches, advances, manœuvres, and that it is unnecessary to work, is to talk lightly and foolishly."

7. The fortification of the battlefield includes the opening of communications, work to facilitate the movements of troops to the front and to improve their fire, demolitions on the front of fortified positions and in the rear of a column in retreat, illumination of the battlefield,

obstacles, and finally, the means for protection against these devices.

8. The *principal devices* which permit the development of the maximum power of troops, and are the component elements of all field fortification are:

First, *cover,* which protects against fire, while permitting a good use of firearms.

Second, *obstacles,* which increase the power of a fortification by holding the enemy under fire of the defenders.

Third, *view,* which permits the defenders to fire and to see what is going on. Artillery fire, especially, needs long and extended views; hence the necessity for having observing stations and for holding securely those points of the terrain which afford positions for them.

Fourth, *communications.* These assure the rapid transmission of orders, rapid and sure movements of troops and material.

PART II.

Rôle of Fortification on the Western Front in Europe 1914–16.

9. Before the superiority of numbers of the Germans (22 corps against 17), the position taken by the French on the front Sambre-et-Meuse on August 21, 1914, was broken on the 23d. The Germans had already made use of intrenchments plentifully supplied with machine guns to break the French offensive. The retreat was effected in the center and left wing of the French army, while the right wing resting on the Vosges and on the Meuse River, held fast and formed a pivot. This right wing employed field fortification, both light and reinforced, to the fullest extent. It immediately abandoned the regulation types for deeper and narrower profiles.

10. On September 5th, the order for the offensive was given. The French armies stood fast and dug in, and the Germans did likewise. But they still used the light form of fortification, utilizing at first, rivers, streams, marshes, earth walls, cuts and fills of roads and railroads, reinforcing these natural obstacles by light intrenchments and simple lines of barbed wire stretched through the growing crops.

11. The French offensive succeeded and the Germans retreated. But the exhaustion of the troops' energy and ammunition became evident on both sides, and the slowness of the pursuit permitted the Germans to dig in and form on the right bank of the Aisne a fortified barrier, utilizing natural obstacles of the most diverse kinds to shelter and strengthen firing lines, to hide and protect batteries of all calibers, to shelter reserves, and headquarters, and to reorganize supply in food and ammunition. This barrier forms an extended front, an uninterrupted succession of supporting points, of centers of resistance, natural and artificial, mutually supporting each other, yet so disposed that the fall of one does not bring about the fall of others, the whole presenting a close analogy with the defensive organization of a modern fortified place, with its advanced positions, its principal line of defense, its supporting positions and its central nucleus.

PART III.

Use of Field Fortification on the Offensive and on the Defensive.

Use on the Offensive.

12. In the *preliminary operations,* the Advance Guard has as its mission:

To clear away obstacles.

To attack the enemy so as to oblige him to show his force.

To occupy the supporting points necessary for the deployment

of the main body, and if necessary to capture them.

To organize supporting points.

13. *During the approach,* it is still the mission of the Advance Guard:

To destroy obstacles.

To open communications to the front.

To improvise means of crossing obstacles.

14. *During the forward movement after deployment,* it is necessary:

To destroy or open passages through obstacles.

To improvise means of crossing obstacles.

To improve the cover against view and against fire.

To construct obstacles.

15. *During the combat,* it is necessary, rush by rush, and step by step:

To utilize the cover afforded by the ground.

To improve this cover.

To construct cover, where natural cover is lacking.

In general the principle is that when the skirmish line can no longer advance, it must dig in; one man out of two digs, while the other fires.

16. *During the assault,* the assaulting troops:

Will utilize the defiladed or covered lines of approach.

Will clear the routes to be followed.

Will open passages through obstacles.

Will improvise means of crossing obstacles.

17. *During the pursuit.*—Troops following the assaulting line will thoroughly organize the ground won.

18. *In case of breaking off the fight,*—The retirement will be effected under the protection of a position organized in rear by fresh troops utilizing the cover previously occupied and held.

USE ON THE DEFENSIVE.

19. The defensive organization of a natural supporting point and of a center of resistance are to be treated in later chapters, so that only the steps to be taken in case of emergency will be mentioned here.

20. *Improving the field of fire:*

Works permitting front and flank fire.

Clearing the field of fire.

Obtaining the ranges of various points in the field of fire.

21. *Construction of cover against sight and fire.*

22. *Establishment of communications:*

Forward to advanced positions for observation.

Laterally, to connect the parts of the firing line.

To the rear, to permit the reinforcement of the firing line.

23. *Accessory defenses:*

Obstacles in front of the firing line.

Measures to protect points of passage.

Strengthening of intrenchments, building of shelters, commanders' stations, etc.

PART IV.

THICKNESS FOR DEFENSE AGAINST FIRE OF INFANTRY, ARTILLERY AND TRENCH WEAPONS.

24. The object of an intrenchment is to protect the defender, whether at rest or in the firing line, from hostile projectiles. Its profile therefore depends upon the armament in use, and it is necessary to study the effect of projectiles.

Infantry Fire.

25. The rifle, the machine gun and the automatic rifle, adopted by the different powers, throw a cylindro-ogival bullet, which has at the short and mid-ranges a considerable remaining velocity. Its penetration varies according to the ballistic force of the arm, the substance traversed, and the form of the bullet.

26. *Bullet D (French) and Bullet S (German).*—Bullet D is entirely of brass, of bi-ogival form, and 1.53 inches long, figure 1. Bullet S is formed by a core of lead, "a," figure 2, surrounded by a jacket of steel, "b," and plated with German silver. Its front part is cylindro-ogival; its rear part, cylindrical. It is 1.1 inches long. Bullet D weighs 197.5 grains and has an initial velocity of 2360 feet. Bullet S weighs 154 grains and has an initial velocity of 2820 feet. From 0 to 900 yards the trajectory of the bullet S is flatter than that of D; beyond 900 yards, the reverse is true. The accuracy of the bullet D becomes clearly superior to that of S, but the curved trajectory of the bullet S permits it to search depressions and to reach the reserves in rear.

27. *Thickness for protection against the German Bullet S* (at all distances).

Steel Shields.

Sheet-steel.—2 sheets of steel of .16 in., one behind the other at 1.2 in., practically stop the bullet, as a third sheet is only dented.

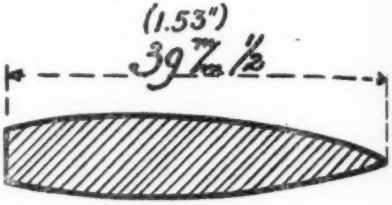


Fig. 1. —

Artillery shields of .2 in. are only perforated at distances less than 350 yards.

Shields for attack, and Parapet

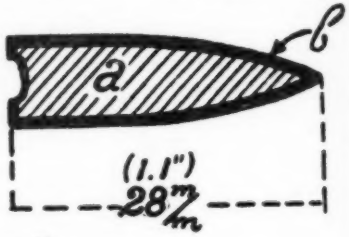


Fig. 2. —

shields of special steel are not perforated by the bullet S at distances greater than 150 yards. Two shields

Nature of material	Thickness	Nature of material	Thickness
Earth (necessary thickness for all cases)	3 ft. 4 in.	Walls of rammed earth	2 ft.
Sand	2 ft. 6 in.	Walls of brick	1 ft. 8 in.
Manure	9 ft. 10 in.	Walls of rubble	1 ft. 4 in.
Saplings and soft wood	2 ft.	Loose snow	9 ft. 10 in.
Oak and hard wood	1 ft. 4 in.	Packed snow	3 ft. 4 in.
Hay rick	19 ft. 8 in.	Frozen snow	3 ft. 4 in.

Sand-bags.—Beyond 400 yards, one length of bag; from 400 to 100 yards, 1½ length; from 100 to 50 yards, 2 lengths; at less than 50 yards, 4 lengths.

placed at a few inches from each other stop the bullet at 25 yards. Shields are now being manufactured which stop the bullet at 50 yards.

Sheet-steel and Sand.—2 sheets of .12 in. separated by 1.6 in. of sand stop the bullet at 10 yards.

Wood and Sand.—The same result is obtained with a cover of 1.8 in. of oak and 2.4 in. of pine.

28. *Armor piercing bullets.* — The Germans have employed a special armor-piercing bullet called SMK, of steel with a brass jacket and slightly truncated. This bullet perforates the special steel sheet of less than .47 in. at all distances, and of .55 in. at 50 yards. The resistance of the plate increases rapidly with the angle of incidence of the bullet.

The bullet S turned end for end in the shell has a great penetrative power at short range, but it then acts like a dum-dum bullet.

By truncating the bullet D so that it presents a cross section at .1 in. from the point, a great penetrative power against shields is given for short ranges (Fig. 3). A steel bullet has recently been put into the French service.

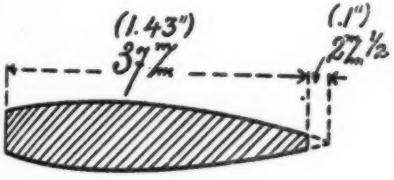


Fig. 3.—

ARTILLERY FIRE.

29.—*Employment.*—In field warfare the French Artillery uses projectiles with wide range of action; it employs, for this purpose, high explosive shell and shrapnel. The high explosive shell of the 75 (2.95 in.) fired with sufficient density, due to its rapidity of fire, has a terrible effect on dense formations. Most of the guns used have a flat trajectory.

The German Artillery, on the contrary, has preferred heavy projectiles, fired with large angles of fall, with violent but very local action; so, in spite of a prodigious expenditure of these projectiles, the results have been small.

In position warfare, the 75 (2.95 in.) gun has always played a preponderant rôle, while the German 77 (3.03 in.) has not been nearly so effective. Moreover, if the heavy artillery is compared, the long French projectiles are superior to the German of the same calibre by reason of the greater weight of explosive that they carry.

30. *Action of the projectiles.*—Shells bursting at a certain distance above the ground, either before reaching it (fuse) or after ricochet, produce two kinds of sheafs, viz., narrow and open. Shells bursting upon impact or after slight penetration (delayed action) are used either against personnel or for the destruction of obstacles. In general, the same projectile can be used for either purpose.

31. *Shell used against personnel.*—For this purpose there are used shrapnel of 77 mms. (3.03 in.), 90 mms. (3.5 in.), 10 cms. (3.93 in.), 13 cms. (5.12 in.), 15 cms. (5.9 in.), and 21 cms. (8.27 in.) which contains 170 lead balls of 26 grammes and 135 steel balls of 150 grammes. These balls are more than 1.2 in. in diameter and can act efficiently against shields.

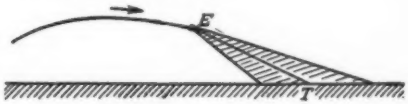


Fig. 4.—

The combination shell 105 (4.13 in. light howitzer) is also used for this purpose. It is fired like shrapnel, time or percussion.

32. *Shell with closed sheaf.*—In the shell bursting at E (Fig. 4), the balls

which it contains are thrown into the interior of a cone having for an axis the tangent ET to the trajectory.

The trace on the ground is oval in form, the part with most hits (effective zone) being situated nearest the bursting point (Fig. 5).

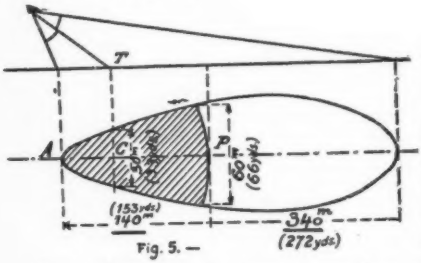


Fig. 5. —

For a given ball, the danger zone then comprises all the distance AC on the ground on which a man standing will be hit (Fig. 6). The flatter the trajectory the longer will be AC.

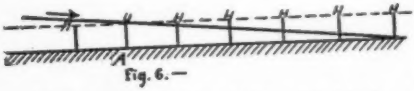


Fig. 6. —

If the personnel is sheltered behind a parapet, the flatter the trajectory and the narrower the sheaf the more the personnel will be sheltered. The more

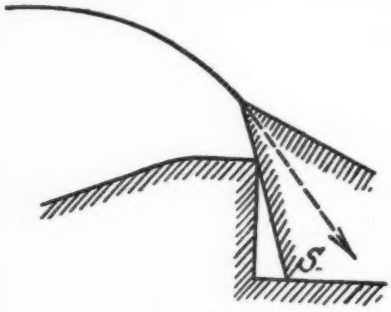


Fig. 7.

curved the trajectory and the more open the sheaf the more the personnel will be exposed (Fig. 7).

If the personnel is protected by a roof covered with 4 in. of earth, the balls will be stopped.

When the shells are percussion fired for a small angle of fall (15°, Fig. 8),

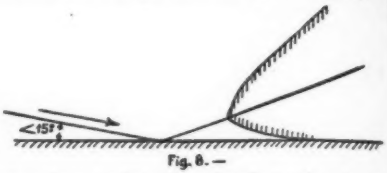


Fig. 8. —

they burst after the ricochet; the sheaf obtained sweeps the ground well as long as the angle of rise remains small; this angle increases with the angle of fall; a time may come when all the sheaf will pass over the target.

33. *Shell with open sheaf.*—The necessity for reaching the personnel behind a parapet or behind vertical shields has led to the invention of projectiles giving a sheaf of balls or fragments spreading in a direction approaching the normal to the trajectory. To this type belong the French " unit " shell, and the German high explosive shell of the 77 gun and 105 howitzer. The German 77 high explosive shell bursting with time fuse, gives a hollow sheaf of 114° (Fig. 9). This sheaf is composed of

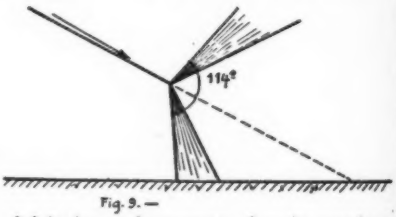


Fig. 9. —

fairly large fragments, few in number, and of low initial velocity. Certain fragments are still effective at 15 yards, as a miximum to right and left. The action is very local, and none at all if the fire is not well regulated, on account of the narrowness of the sheaf.

The German shell of the light howitzer has very thick walls, and small explosive chamber. The sheaf is hollow, more open than the preceding one (200°, Fig. 10). The radius of action

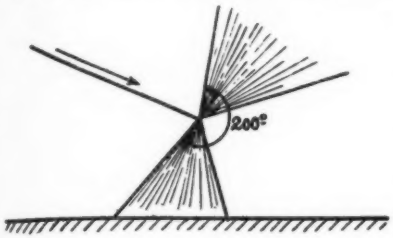


Fig. 10. —

is 25 yards. There is the same difficulty of regulating fire as for the preceding type.

34. *Shells used against materiel:*

Shrapnel, old type and modern.— These projectiles have sufficient power to be employed with percussion fuses against the matériel of artillery, walls, houses, etc.

High explosive shell.—As the use of the delayed action fuse may impair the action of the high explosive shell in certain cases, instantaneous detonating fuses are used. Shells provided with these burst immediately upon impact. They are used advantageously against walls, matériel, parapets, barbed wire entanglements, abatis, etc. Fired into the earth, these projectiles produce craters. They can therefore destroy heavy parapets. Against masonry covered with earth, delayed action fuses are used.

The German 90 mm. shell (3.54 in. with .36 lbs. of explosive) and that of the 77 mm. (3.03 in. with the same explosive charge) give results very inferior to those of the French 75 mm.

The German 105 mm. shell (4.13 in. with 2.2 lbs. of explosive) is more effective than that of the 77 mm.

The German shell of the heavy howitzer, 15 cms. (5.9 in. with 10.36 lbs. of explosive) is intended to act by its fragments. These can penetrate artillery shields at 40 yards to the right and left, 5 yards forward and 25 yards to the rear.

The German 10 cm. shell (3.93 in. with 4.4 lbs. of explosive), that of 13 cm. (5.12 in. with 8.8 lbs.) and that of the 15 cm. (5.9 in.) gun give results similar to those of the heavy howitzer.

The German 21 cm. shell (8.27 in. with 33 lbs. of explosive) is intended to be used against steel plates and concrete; it is often used against buildings. Its effect is very destructive but local.

The German 28 cm. shell (11.02 in. with 22 lbs. of explosive), armor piercing, or semi-piercing, with very strong ogive, is intended for concrete and masonry. It gives craters of small dimensions.

The German 305 mm. shell (12 in. with 44 lbs. of explosive) or Skoda mortar, armor-piercing projectile is intended to attack concrete forts.

The German 42 cm. shell (16.5 in. with 88 lbs. of explosive) is employed for a similar purpose. In a mass of concrete it produces a wide but shallow crater, and can produce serious trouble in the delicate machinery of forts, such as turrets, etc.

Fire of Trench Weapons.

35. To the fire of Infantry and Artillery is now added that of *Trench Weapons*. These weapons, such as bombs, grenades and torpedoes, can be compared, so far as their effect is concerned, to the artillery projectiles. In France, bombs and grenades, thrown by hand or by machines of low power

(cross-bows, slings, howitzers, mortars) give, on bursting, fragments which are similar to those of the 75 mm. shell.

Their force ceases to be deadly beyond 25 yards. Bombs and torpedoes thrown from 500 to 1800 yards by apparatus of high power (guns of 58,240 and 340 mm. (2.28, 9.48 and 13.38 in.) and howitzers of 75 mm.) and containing from 35 to 220 lbs. of explosive, produce craters as deep as those caused by projectiles of the heaviest calibres. They cause the destruction of shelters, protected by armor and concrete, as well as the cave shelters more than 26 ft. underground.

36. The Germans employ bombs, grenades and torpedoes similar to the French. Their bombs and torpedoes are thrown by Minenwerfer of different models. The principal ones are:

Of small calibre, 7.5 cm. (2.95 in.) weighing 108 lbs., range 1150 yds., projectile weighs 10.1 lbs. and contains 2.2 lbs. of explosive. It is called a light mine.

Of medium calibre, 17 cm. (6.7 in.), range 850 yds., projectile contains 15.4 lbs. of explosive; called a medium mine.

Of heavy calibre, 24.5 cm. (9.64 in.) weighing 1322 lbs., range from 450 to 900 yds., projectile weighs 220 lbs. and contains 110 lbs. of explosive; called a heavy mine.

37. *Thickness for protection against light artillery and trench weapons of low power:*

38. *Thickness for protection against heavy artillery and trench weapons of high power:*

150 mm. (5.9 in.) howitzer: 2 layers of saplings of 6 in. and 2 layers of earth of 1 ft. alternated.

210 mm. 8.26 in.) howitzer: 3 layers of saplings of 6 in. and 3 layers of earth of 1 ft. alternated and reinforced by flagstones, sacks of cement, rubble, or railroad rails.

280 mm. (11.02 in.) Howitzer and calibres above: 17 to 33 feet of undisturbed earth (cave shelter).

39. *Blast.*—Besides the metal fragments, there is the blast against which protection must be provided. This blast is caused by the explosion of the projectile, and is strong enough to overturn walls, break in doors and knock furniture and men about. The commotion produced results in nervous effects often mortal. Moreover, the action of the gas produced is very dangerous and causes long and serious illness. Their effects are not usually noticed for some days after the explosion, and they produce loss of hearing, sense of smell, of taste, of sight, as well as paralysis, and prolonged fainting spells. The cure is very slow.

Protection against this double effect of blast is obtained by:

1st. Making the trenches as narrow as possible.

2d. Dividing up the works into small

Fuse	Nature of material	Direct hit	Oblique hit
Time	Low earth	16 in.	4 in.
	Hard wood	6 in.	3 in.
	Soft wood	10 in.	6 in.
	Brick	2½ in.	
	Steel sheet	.1 in.	
Percussion	Projectiles of the 77 mm. gun	3 ft. 4 in. of earth.	
	Projectiles of the 105 mm. howitzer	7 to 10 ft. of earth.	

sections by increasing the number of traverses.

PART V.

Intrenching Tools for Infantry, Cavalry and Engineers.

40. Two things are needed for field works: men and tools. The men are supposed to be engineer soldiers; as a matter of fact, they are almost always infantry men.

Troops of all arms have a supply of tools which comprises:

Tools for earth work—shovels, picks and pick mattocks.

Tools for demolition — hand-axes, bolos, wire cutters, axes, crowbars, and saws.

Tools are classed as portable tools, carried on the person of the soldier; and park tools, carried on wagons or pack mules.

41. *Tools for Infantry:*

Portable tools for each company:

34 pick mattocks, with carriers.
17 wire cutters, with carriers.
8 hand-axes, with carriers.
9 bolos, with scabbards.
68 shovels, with carriers.

Park tools for each regiment:

26 axes.
7 crowbars.
150 pick mattocks.
450 sand bags.
13 saws, hand.
13 saws, two-man.
300 shovels.

42. *Tools for Cavalry:*

Portable tools for each troop:

8 hatchets with covers.
24 picks, with covers.
72 shovels.
105 wire cutters.
1 sledge hammer.

Park tools for each regiment:

26 axes.
7 crowbars.
150 pick mattocks.
13 saws, hand.
13 saws, two-man.
300 shovels.
450 sand bags.

In addition each squadron has a demolition outfit carried on a pack mule.

43. *Tools for Engineers:*

Each company carries in 2 tool wagons:

4 adzes
26 axes.
2 pinch bars.
4 sledge hammers.
6 hatchets.
18 gabion knives.
36 machetes.
4 mauls.
4 peevies.
6 picks, railroad.
36 pick mattocks.
18 pliers.
2 posthole diggers.
2 saws, 1-man.
4 saws, 2-man.
72 shovels.

Miscellaneous tools and supplies, including demolition and carpenter tools.

In addition 8 pack mules carry miscellaneous tools and supplies for intrenching, pioneer and demolition work.

Each battalion headquarters carries in a wagon a complete blacksmith's equipment.

For complete lists of above equipments see Unit Accountability Manual issued by A. G. O.

44. The duties of the Engineer troops in connection with field fortification pertain both to the attack and the defense and include the selection of defensive positions when out of the presence of the enemy; rectification of and assistance in the selection of such positions in the presence of the enemy; the

location, design, and construction of the more important field works; assistance in and supervision of the construction of the hasty defenses wherever possible; the supply of tools and materials, and the reconnaissance, demolitions, water supply and communications incident thereto.

45.—*Conclusion.*—Such is the matter preliminary to a study of field fortification. This subject must be thoroughly studied for proper preparation for modern warfare. The time has passed for "ramparts of human breasts," and the "war-like ardor which will break up all assaults." We must know how to dig and how to make war with pick and shovel as much as with weapons. Experience has shown us that courage must be sheltered until it can be usefully employed in the open.

It is the daily work, faithfully done in all weathers and under all circumstances, that gives glorious results. There is no undignified element in warfare. The men who dig and work at transport of supplies and ammunition are as meritorious as those who fire and charge. They all work to a common end—for the common defense.

Preparedness

By Captain Walter Krueger, Infantry

A GOOD deal has been said and written within the current year on the subject of military preparedness. Writers and speakers have devoted a good deal of time and energy to expounding this or that scheme. Some are in favor of the Swiss system of service; others prefer the Australian scheme; others again still hold stubbornly to the time honored but, nevertheless, archaic and unfair voluntary system.

The worst feature of the voluntary system is that it is essentially unfair in that it does not distribute the burden of service equally among all the people capable of performing it; but this is by no means all, for the voluntary system never has and never will enable a nation to put forth its whole strength promptly from the outset. Moreover, this system, to which we still cling with such tenacity, does not enable us to train men before the crisis arrives.

The Swiss and the Australian systems are both makeshifts. This is true of Australia, which feels amply protected by the British fleet and therefore does not feel that it needs more than a makeshift system. It is, likewise, true of Switzerland, which, owing to its small area and mountainous character, would, in likelihood, not be attacked, because there is too little to be gained by such an attack. Besides, Switzerland is an asset both to France and Germany in war, to say nothing of Italy and Austria, for any one of them can rest a flank against that little country in case of a movement against any one of the others. Of course, it is claimed that the Swiss military system prevented the Germans from invading France via Switzerland, but there is probably no professional soldier in the world to-day who places any credence whatever in that assertion. As a matter of fact, such a move on the part of Germany would have been the height of folly, because Switzerland was not situated on the *most direct* line to France. So much for these two systems.

But why should we examine into systems that some small, comparatively insignificant country has adopted as a means of defense? Would it not be better to investigate the systems of the great powers, at least, of those who could attack us? What difference does it make, anyway, what system of defense Australia or Switzerland, or Portugal or Timbuctu has, if the great powers, our antagonists in the world markets, have something quite different and much more efficient? We should study how preparedness is produced in those great powers whose line of advance, commercial or other, may collide with ours and eventually precipitate war.

We should do this now, for we are getting richer day by day, while the rest of the world is growing poorer. And if we do not do this now, we may never have a chance to decide our own internal questions that we debate now, because someone else may decide them for us in a way little to our liking.

So, the question is not what we will put up with in the way of military preparedness, but rather what has the other fellow who is competing with us, in that line? Can we beat him at this game with anything inferior to his own? Can we beat him with anything that is just a bit less good than what he has? Look over the world to-day and see what other nations have in the way of military forces; how these forces are constituted; how they are organized, armed, equipped and trained; how the officers are selected and trained. Aside from the United States and China, there is not a single great country to-day that depends upon an amateur military force. Even England has adopted a partial universal service. Her tardy action in this regard was due to the fact that she was fortunate enough to have allies that supplied the military forces needed—the bulk of them at least—whereas she did her share with her navy, a share that the others could not, even if they would, perform.

Our people are at present just waking up to the fact that military training is necessary, but they do not as yet perceive that there is a vast difference between military training of the individual and the training of the mass, or collective training. An army is after all a crowd. If it is untrained, it is a mob. If its members are trained individually, it may be called an individually trained mob. It may be likened to a football team comprised of trained football players, who have never played together as a team. Could they win a game from a team individually and collectively trained? You can answer this question as well as I can. It is the same with an army, but the task of individually and collectively training its units is infinitely greater, and, moreover, if due to the failure of appreciating this fact, the game of war is lost, the consequences surpass in magnitude anything that you or I or anyone could imagine. It is, therefore, not sufficient for a soldier to be trained individually. Soldiers must be grouped into squads, the squads into platoons, the platoons into companies, the latter into battalions and the battalions into regiments; these again into brigades, the brigades into divisions and the divisions into army corps. And it will not suffice to train each of these units separately; they must be trained together so as to become a perfect team. This is of vast importance. This individual and collective training must be thorough, that is, it must be at least as good as in the armies of our possible antagonists. In addition, all soldiers must be individually and collectively disciplined. Now, discipline does not imply subserviency, but it does imply subordination of the individual will for the benefit of the unit to which the individual belongs. Discipline may be defined as the doing of everything that should be done and the not doing of whatever should not be done. Cohesion and teamwork cannot be produced in any other way, and cohesion and teamwork are absolutely indispensable in war. These results cannot be accomplished in any amateur organization, no matter how intelligent the individuals composing it may be.

If our people would only realize these facts, all would be well, but they delude themselves into believing that as our men are good fighters—and this point is always made—a little bit of training of an amateurish sort under lay officers will produce all that is required in the way of an army to lick all creation. No one but a soldier can see the folly of this, and he is considered to be an interested

party and therefore his evidence is discarded as untrustworthy. Truly, no one is so blind as he who will not see.

An army should fulfill two functions, one to act as a striking force that is in readiness at all times, and the other to act as a school through which men pass to graduate into the community, where they remain for a certain period in reserve until called upon to augment the units to which they formerly belonged and in which they received their training.

It is painfully apparent that an army cannot fulfill either of these functions unless every male member of the nation has to pay a duty for the privilege of living within it, *i.e.*, to serve, or to be liable to serve. It is not enough merely to pass a law making all men subject to training, for that would not accomplish the object sought. Even if all our young men were trained individually, we would not have an army, for it takes a great deal more than individual training to make such an army. In other words, such a law would simply produce a lot of individually trained men who, collected together into the ghost of an army, would certainly not be efficient enough to cope with the army of any of the great powers. The only way for us to get real preparedness, to get a real army, capable of coping with the army of any first class power, would be to make every young man who is physically fit serve in the regular army for a certain period. The age at which this service should be demanded, the period of service, and the number of men that are to serve, are questions that the people must settle themselves. Training at odd moments by citizens, in any organizations whatsoever, whether that force be called National Guard or Militia, simply will not produce the results that we must have in order to cope with any antagonist worthy of our steel. How can anyone expect any citizen force to get the efficiency necessary to withstand the trained legions of any first class power? As long as the individuals of such organizations, both officers and men, have to earn their livelihood and can spend only a few hours a week at most on their military duties, such forces can never hope to defend our country successfully against any invader whose forces are better organized and trained. The trouble is that our people still believe, in spite of the handwriting on the wall, that military amateurs are practically as good as professionals. They may be argued out of this belief apparently, but way down in their hearts they cling to it with a persistence that defies everything. This is at the root of all our military problems. This belief must be eradicated before we can hope to have anything in the way of real preparedness. Our people can easily see that it would be the height of folly to make out of the most efficient officer of our regular army a business manager of a department store; but they do not deem it unwise at all to make an intelligent business man a general. Of course, the officer-manager of a department store would so quickly make a failure of his job that money would be lost, and this fact is so apparent even to the unintelligent that the experiment would never be tried. But that a business man could possibly fail, or rather is sure to fail, if he attempts to hold down the office of general, or any military office for which he is not trained, is not so apparent. To make that failure patent to the public eye would require the crucial test of war, and, of course, war is but a remote possibility in the mind of the people. That any man, unless he

devotes his whole time to the work, can possibly master the military profession, is out of the question. To be sure, our people are ignorant of the fact that the actual military training of the citizen officers of any of our citizen forces falls way short of the training received by the officers of any army of standing in the world. Yet our people expect their sons, their brothers, and their friends to fight in a military force, or in military forces, commanded by officers who, in the nature of the case, are not the equals in knowledge and professional ability of those of other armies. This does not imply that the officers of our citizen forces, by whatever name they may be called, are lacking in patriotism or courage, but simply that they cannot become efficient as long as they are citizens and must earn their livelihood, devoting only a relatively small amount of time to their military duties. This must be changed. We shall either have to revise our whole military system or anticipate that, at the first clash with a first-class power, we shall be vanquished. This is the literal and unvarnished truth. We cannot hope to put up a real fight against a real enemy, unless we have made all our resources in men and material available in times of peace, and unless we have molded them into an army, a *real army*, commanded by men as thoroughly trained and as capable in every respect as those of any army that may be launched against us.

To accomplish this, will necessitate the adoption of universal liability to service; that is to say, not military service at odd moments in any military body whatsoever, but real, businesslike, intensive, military training and discipline, extending over a certain period in the Army of the United States. Suppose we assume that the strength of this army is 250,000 men; that the period of enlistment is seven years as at present (or any other period determined upon); and that the first two years thereof are with the colors, the next three with the First Reserve and the last two with the Second or National Reserve.

The above scheme would require that one-half of the entire army be replaced every year, or, in other words, the army would need 125,000 recruits per annum. Since 1,500,000 men arrive at the age of, say, twenty every year, it should not be difficult to select from this great number, by lot, 125,000 men. Before proceeding, it might be a good plan to say a word or two about the advantages and disadvantages of a one-, two- and three-year period of service.

If a one-year period of service (with the colors) obtains, the entire army, officers and noncommissioned officers excepted, would have to be replaced every year, unless one-half of the annual batch of recruits reported in June, for example, and the other half in December, which would be objectionable from a training standpoint. Under universal service conditions, all enlistments would, of course, expire about the same time. Now, with a one-year period of service, as all recruits would join at the same time, and as all enlistments would expire at the same time, the army would be anything but an efficient striking force at such times and for some time thereafter, while the recruits were being trained. But, as already stated, the only remedy for this would be to cut the period of service down to six months, which is objectionable, because field work, target practice, etc., could not be efficiently carried out. A two-year period of service with the colors is

better, in that only one-half of the whole number of men in the army leave annually, or, to put it another way, one-half of the army is always trained and incoming recruits can be more quickly assimilated. In consequence the standard of readiness will not be reduced to zero. With a three-year period of service only one-third of the men leave annually, and this means that two-thirds of the army is always fully trained and ready to strike. It is believed that, apart from the objection of a long period of service, the three-year period produces the best results, but, as it is perfectly feasible to train a soldier in two years, and to train the organization of which he is a member within that period, and as it is desirable not to remove the young man from civil pursuits for a longer period than is absolutely necessary, the two-year period is preferred by the writer. It has some other advantages for a small army, viz., it permits more men to receive training.

Assuming, therefore, for the sake of argument, that such a system and period of service were adopted, we should have to select from among our young men 125,000 every year to serve in the army. Assume that the entrance age is put at 20. During the year in which a young man arrives at that age, he would be examined physically and, if found qualified for military service, would have to report at some central locality in his state or district where it would be finally determined by lot whether he should serve in the regular army directly or in the national reserve. Exemptions from service should be laid down in the law. At designated localities where candidates for service report, numbers could be drawn to determine who shall serve. For example, if 125,000 men are needed, anyone drawing a number from 1 to 125,000 would have to serve in the regular army, and those drawing other numbers would immediately revert to the 2nd or National Reserve, which could be likened to our present militia.

Let us suppose, then, that John Doe draws number 50. He would then be required to report for duty at the station of the nearest regular regiment, where he would undergo a period of training with the colors lasting for two years. At the expiration of this period, he would pass to the 1st Reserve, in which he would remain three years, then to the 2nd Reserve, where he would remain for two years, thus completing his seven years' period of service. While he is in the 1st Reserve, he would be required to report each year for one month of training. While in the 2nd Reserve, he would be required to report each year for fifteen days of training. Thereafter he would be free from further military duty.

Just before completing his term of service with the colors, each man should be given a chance to take the examination for a commission as second lieutenant in the regular army, if he so desires. He should, likewise, if he desires, be given a chance to take the examination for a second lieutenant in the National Reserve. If he passes the latter successfully, he should be commissioned and act as 2nd lieutenant for a year or two and then be given a chance to compete for 1st lieutenancy in said reserve corps. Again, if successful, he should act in that capacity during the summer's training period. Finally, he should be given a chance to become a captain in the Reserve Corps and should act as such during the remainder of his service in the reserve, or longer, if he so elects. Anyone who,

as above stated, becomes a second lieutenant in the regular army, active list, would of course rise from grade to grade practically as is now the case. It may be objected that this system will take only a small fraction of our young manhood into the army and will let all others lucky enough to draw the proper number escape with training in the National Reserve, but this can be remedied by increasing the size of the army, or by making the training in the National Reserve as rigorous as is practicable every summer when they may be called out for training. The physical examination should be as strict as possible in order to eliminate the maximum number, but there should be as few exemptions as possible for other causes. This would be eminently fair and, in our populous country, would produce an army second to none. There would not be any exemptions from military service based upon wealth, social position, influence, or education. If the system were rigorously carried out, it would prove to be an influence for good whose value it would be impossible to calculate.

Let us return to the subject. Our army at present has a paper strength of less than 200,000 men, but will have about that strength when the present laws are carried out. With the advent of this system, no more enlistments would, of course, be entered into under the old laws, and the number of men serving under them would gradually dwindle away until all are discharged, except noncommissioned officers, who could remain in active service in a fashion similar to that outlined above for officers. Noncommissioned officers for the Reserve should be selected in a manner similar to that by which officers are selected for that body. It would be a good plan to keep all men who enlisted under the old system until the end of their periods of service so as to have at hand an effective trained force until the effect of training under the new scheme makes itself felt.

Under the assumption that all recruits report in October, we would then obtain from this system alone, the following:

	With Colors	1st Reserve	Nat. Reserve
Oct. 1917	125,000		
Oct. 1918	250,000		
Oct. 1919	250,000	125,000	
Oct. 1920	250,000	250,000	
Oct. 1921	250,000	375,000	
Oct. 1922	250,000	375,000	125,000
Oct. 1923	250,000	375,000	250,000
Oct. 1924	250,000	375,000	375,000

From the table it can be seen that by 1924 we would have a real, thoroughly trained army of 250,000 men, a first reserve of 375,000 men, to fill the units of the active army to war strength and to replace casualties in war, and a second or national reserve formed into separate units, 375,000 strong, plus all others who are trained in it and who have not passed through the active army. The National Reserve should be officered entirely by reserve officers up to the grade of captain and all higher grades should be filled largely by officers taken from the active list of the army.

No winter training should be required for units of the National Reserve except, perhaps, theoretical schooling for the officers.

A man entering the army under this system would get the following training:

With the colors (*i.e.*, active army), 2 years.

With the 1st Reserve, 3 months (one month each year).

With the 2nd Reserve, 1 month (15 days per year).

A total of two years and four months surely is not too much to give to the service of one's country. And what an army we could have under such a system. All other attempts to create an army are only makeshifts that would, at best, produce but very little real efficiency, and that little would be composed of amateurs who could not, in spite of heroic courage and self sacrificing patriotism, withstand the trained and well-led legions that any great power could launch against us if it chose. To be sure, the training a man would receive in such an army would be hard, but it would be businesslike and would produce something worth while. True, the men in the National Reserve would not get the same rigorous training as the men in the regular army, but their ranks would be leavened by 375,000 men, trained for two years with the colors of the active army, and officered by capable men, all of whom would have had service in the regular army with the colors.

It might be objected that such a system will produce militarism, but that is childish, for it is inconceivable that the small number of young men who would be required to pass through the training school—the army—could turn us into a nation of Militarists just because they had received a two years' training with the colors and had been thoroughly disciplined. A moment's reflection will show that such a result is out of the question as long as our military authority is subordinate to the civil power.

But the advantages of such a system, aside from the principal one of furnishing us with a dependable military force, are that it would distribute the burden as equally as possible among all our people, rich and poor alike, and that when a crisis arrives, all the men needed could be made available, as it were, by the stroke of the pen. Moreover, it would produce among our people a greater regard for the privileges of citizenship, which would have its duties as well as its rights. Last, but not least, it would bring home to all newcomers to our shores the fact that this is not only the land of privileges but of duties. The discipline imparted to the 1,000,000 men who will pass through this school within the short span of seven years will more than compensate for the time they have spent in the military service. I believe, verily, that such men will be able to better themselves materially in any civil pursuit by reason of having had such service, such training and discipline, to say nothing of the improvement of their physique and their general health, which may, and no doubt will, lengthen the span of their lives considerably.

Let us not delude ourselves. We despise a man who allows others to deceive him. Let us not deceive ourselves. Wars may be over, but there is no present indication that such is the accomplished fact. Therefore, let us prepare, but let us prepare judiciously, properly, with an eye to the means of defense which other great nations have. I do not mean to say that we should copy other nations in detail, but I do mean that we should not employ inferior means to combat superior efficiency. How efficiency may be obtained is well known, and it is equally well known how it cannot be obtained. We have a military system that never has and never will produce military efficiency, therefore let us change it. No system of defense will prevail unless it is at least as good as that of our antagonist. If it is ever so little inferior to his, we shall inevitably

lose, and the defeat will lie at the door of the people themselves. Courage and valor, even improved weapons and modern machinery of war, nay even numbers, alone, do not decide the fate of nations. After all, that is decided by the people themselves, not necessarily on the battlefield—in fact rarely there—but in the halls of legislatures and in the chambers of cabinets. Valor on the battlefield will avail us nothing, literally nothing. The desperate valor of millions of men, even if armed with the best weapons, will avail us nothing if they are not organized properly, trained uniformly and thoroughly, thoroughly disciplined, individually and collectively, and ably led by men who are trained to the work. The profession of arms is considered as lightly in this country as in China. Yet the profession of arms delves into every field of human endeavor, and good, indeed, must be the man who succeeds in it in time of war. We *may* lose in war even if we have a fine army, well led by professional soldiers, but we *will* lose the next war if we do not have such an army. If we persist in putting the whole fate of the nation's existence in the hands of military amateurs, we may live to see our institutions crumble in the dust at our feet, and our customs and manners vanish beneath the iron heel of a nation not necessarily more virile than we, but adequately prepared and determined to win. In some respects our very riches are a hindrance to our military preparedness, for our people fondly believe that money can buy almost anything. There is always the danger that comfort and luxury may so dull the spirit of a nation that it will not see the handwriting on the wall. Woe to the people that hire their soldiers instead of doing military service themselves. There is not a single instance in history of a nation that survived long after its citizens ceased to recognize that citizenship meant not privilege alone but service.

After all, patriotism is measured not by holiday oratory but by self-sacrifice. What would you and you and you, Mr. American citizen, do for your country? How much of your comfort, of your wealth, of your blood, would you give to preserve the institutions, the customs and manners, the homes, and every bit of land of this, our country? True, many men say they would be perfectly willing to give their all in case of necessity, but wars come not like the glacier, but like the avalanche, and when the necessity, as you see it, arrives, it is, alas, too late. The time is *now*. To-day we must prepare efficiently to meet the crisis of to-morrow. We should not wait until the fiery furnace of war comes and indelibly imprints on our minds the advice of the father of our country: "*In time of peace prepare for war.*"

Landscape Sketching

Study by School of Musketry, Fort Sill

The panoramic or landscape sketch is the means, par excellence, for target designation. It is also of great military value in illustrating a reconnaissance, making outpost sketches, range cards, and identifying bridges, fords, forks in the road, and other landmarks, by marginal sketches on topographical maps.

The contoured map is indispensable in maneuvering troops.

30. Photography, as a substitute for landscape sketching, has been tested in France with elaborate devices. When taken under propitious conditions of light and atmospheric conditions, the results are fairly satisfactory. But the camera cannot select details. Useless features in the immediate foreground are emphasized, while essential details, more distant, are scarcely perceptible. Views of the same terrain taken from different angles are seldom possible in battle reconnaissance, and the delay in making results available, combining and analyzing the results, will usually render the photographs of little service in that particular engagement. For the quick work and immediate results demanded by battle reconnaissance, there seems very limited use for photography, and the maximum demand for rapid free-hand sketching.

A landscape sketch shows the terrain graphically and requires no study or training to comprehend. The horizon is always of military importance. This is always shown, as well as intervening crests, woods, houses, fences, etc.

A great French authority states:

It is as necessary for an officer to know how to draw as to know how to write, for often with two lines he can tell more and tell it better than with two pages of writing, inasmuch as a few strokes of the pencil are made more quickly and easily than a report is composed, and secure and classify details for a report much better than do the memories which we preserve from a long reconnaissance.

Drawing is the educator of the eye, par excellence. It teaches one to judge ground rapidly, by developing that instinct which gives to the sight power and certainty not acquired otherwise than by the habit of studying the landscape in detail and in its various aspects. It engenders an accuracy of observation which mechanically notes the form and aspect of things, even though the mind be occupied with other matters.

The habit of sketching gives to the memory a faculty that might be called intuitive, that of grasping, in spite of one's self, and in spite of mental distraction, the form and color of objects seen.

The ability to estimate distances and to see military features of the terrain is admittedly an indispensable part of military training. There is no surer or quicker method of educating the eye for ground and distances than actual practice in sketching.

This work, done from the terrain in the perspective, has a terror for most officers and men. It seems customary to state, "I am not an artist," and give

up without an honest attempt to practice this art.

The making of route and position sketches is now required as a matter of routine knowledge throughout our Army. Many an officer and enlisted man points with pride at such sketches now made with little effort, whereas in the beginning he viewed with alarm the possibility of ever being called upon to map a road or outpost position.

When attacked in earnest, landscape sketching will be found to be no more difficult and, to many, far easier than topographical mapping.

An item that may appeal to some, is that the landscape sketch is made by the sketcher while remaining in one spot, and is usually executed while seated.

Military positions are located on the sketch by the angular deflection, measured in mils, from the reference point. The range, determined by measurement or estimating, and the deflection together locate the target, etc. The deflection of each end of troops in line is shown, furnishing the necessary data for determining the hostile strength.

As the reference point is chosen for its clear definition, it will seldom be exactly in the hostile position. The peak may be 20 miles beyond; the house or tree chosen may be nearer or more distant than the lines of enemy troops.

This position of the reference point with reference to the point from which the sketch was made and from which the deflection of targets was determined, must be considered in advancing to a position illustrated by a landscape sketch.

The deflection in mils and the lateral arrangement of features are accurate only for the position from which the sketch was made. A change in the deflection, due to parallax, occurs as soon

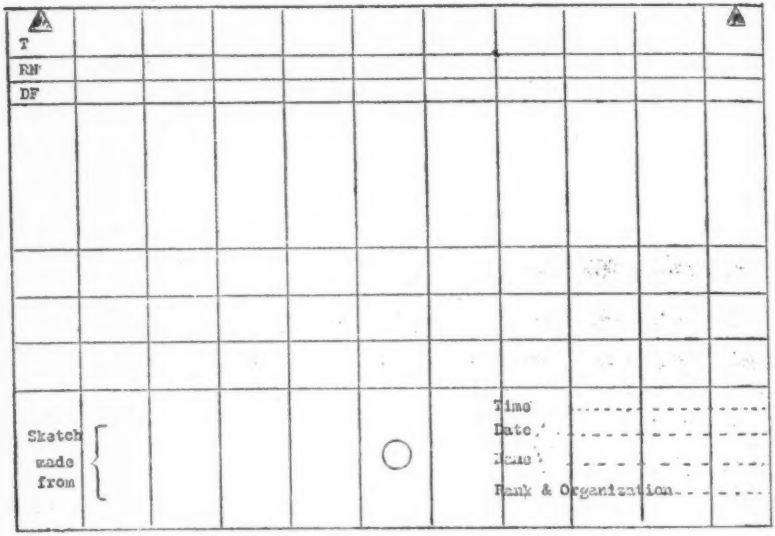


FIG. I.—SCHOOL OF MUSKETRY SKETCHING PAD.

as the observer moves from that position. This fact must be considered in the apportioning of the target sector between companies, platoons, etc.

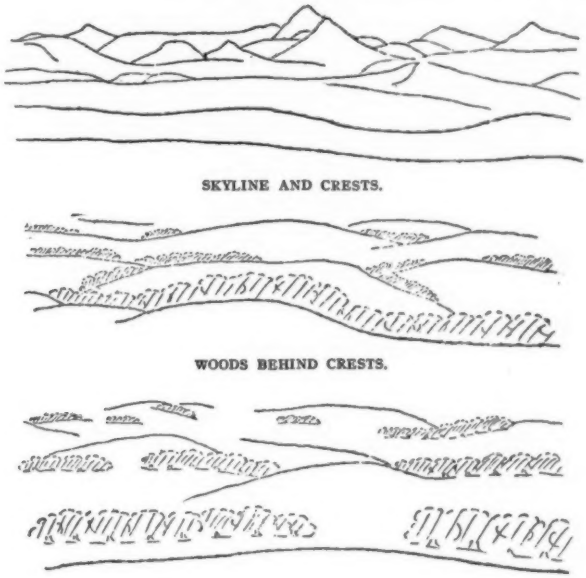
The paper used by a patrol leader will be his notebook or the back of a field message blank. For practice, a sheet of paper about 5 x 8 inches has been found very satisfactory. The length of the sketch will seldom exceed eight inches, which includes a visual angle of about 30 degrees. A pad, especially prepared for sketching, is furnished for this work at the School of Musketry.

When landscape sketches are made on the back of the Field Message blank (Signal Corps, 217, A), held 20 inches from the eye, each inch of the rule printed at the top of the sheet subtends 50 mils; at 10 inches, 100 mils.

TARGET DESIGNATION

31. The landscape sketch presents graphically the location of the target and other data necessary to fire direction and control.

For years, the landscape sketch has been utilized by the Field Artillery in target designation. Its value in connection with rifle fire has only recently been appreciated by the Infantry.



SKYLINE AND CRESTS.

WOODS BEHIND CRESTS.

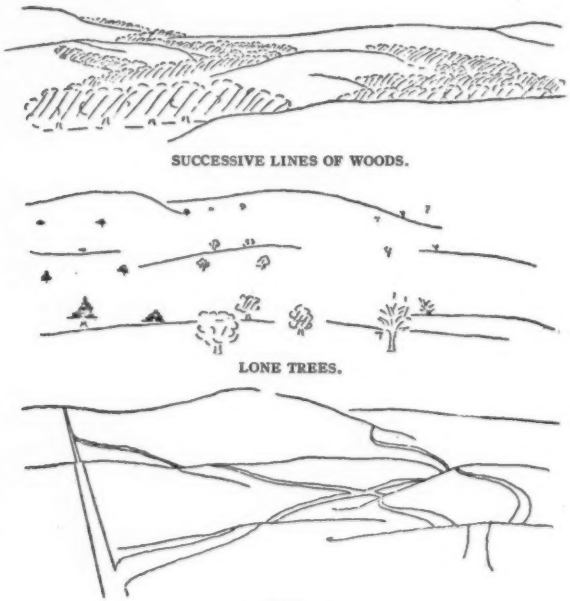
WOODS IN RELIEF.

FIG. 2.

The landscape sketch portrays graphically a sector of the terrain from the position of the observer to the horizon, including the targets. The Reference Point, an easily recognized feature of the terrain, is identified on the sketch by an arrow head. Targets are indicated by use of conventional signs for Infantry, Cavalry, Artillery and Machine Guns. The deflection of the target from the reference point is given

in mils, and the range in yards, both entered along the upper margin of the paper, along with any explanatory data advisable. The error in deflection should never exceed 10 mils. The manner in which the ranges are determined —by measurement or estimating—is noted on the sketch.

The deflection given locates the flanks of the target and permits a division into sectors, selection of aiming points, preliminary instruction to range estimators, etc., before arriving at the point from which the sketch is made.



SUCCESSIVE LINES OF WOODS.

LONE TREES.

ROADS.

FIG. 3.

Illustration of Reconnaissance Reports

32. By means of landscape sketches, a patrol leader can render his report clear, accurate, brief and comprehensive.

A reconnaissance patrol may travel many miles and discover many items of military importance in the terrain covered. Landscape sketches made at happily-chosen places, identified on the route sketch, will reproduce the terrain in a familiar aspect. A few lines and explanatory remarks will convey graphically and accurately much valuable information difficult to describe otherwise. A report of a hostile position is of the greatest importance; the same report, illustrated by a sketch showing graphically the flanks and location of the position with reference to the neighboring terrain, permits small opportunity for error. Such a sketch, locating the hostile disposition with reference to easily recognized features of the terrain, showing crest lines and possible firing positions, may be made from

the concealment offered by some brush or rocks.

The position of the observer and the direction illustrated by a landscape sketch are located on the route sketch thus,

the number corresponding to that on the landscape sketch, and the arrow pointing in the direction illustrated.

A battle reconnaissance patrol is sent out just preceding, or even during, an engagement. Reports must be brief but comprehensive. Panoramic sketches, made from possible firing positions, portray graphically the targets presented by the hostile lines.

Outpost Sketches

33. A landscape sketch, portraying the terrain in front of an outpost position, presents a graphic picture to higher commanders of the country under observation. Sketches, on which the ranges and directions to different points are noted, are of great value when this information is transmitted on changing reliefs.

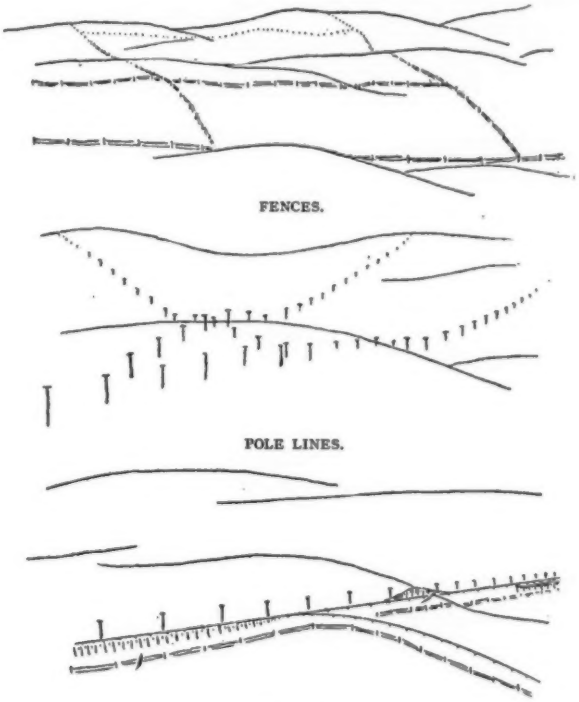


FIG. 4.

Range Cards

34. Ranges are determined to various objects on the terrain in front of a position prepared for defense.

This information is placed on sketches of the terrain, or Range Cards. These sketches are always graphic representations of the object indicated, drawn

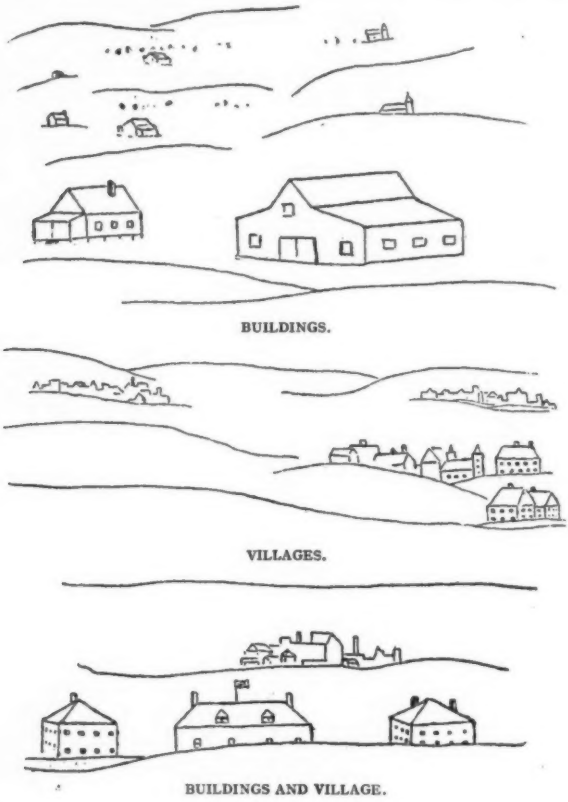
plainly to facilitate ready identification by troops called upon to oppose the enemy.

Range Cards, made as landscape sketches, permit easy and accurate identification of the Ranging Points.

ground. This difficulty is eliminated if a small sketch of the crossing, bridge, etc., appears on the margin of the map. (Figs. 13 and 14.)

PANORAMIC OR LANDSCAPE SKETCHING

Landscape sketching presents the ter-



BUILDINGS.

VILLAGES.

BUILDINGS AND VILLAGE.

FIG. 5.

MARGINAL DRAWING

35. Small marginal drawings of fords, bridges, forks in the road, landmarks, etc., add immeasurably to the value of the topographical sketches or maps. With the map alone there is often delay in identifying the road crossing, bridge, ford, etc., on the

rain as actually viewed by the observer. Proficiency is acquired by practice. Conventional signs are limited to those representing troops. Other military data are written on the sketch.

36. Military landscape sketching requires a certain knowledge of the general principles of drawing, including the

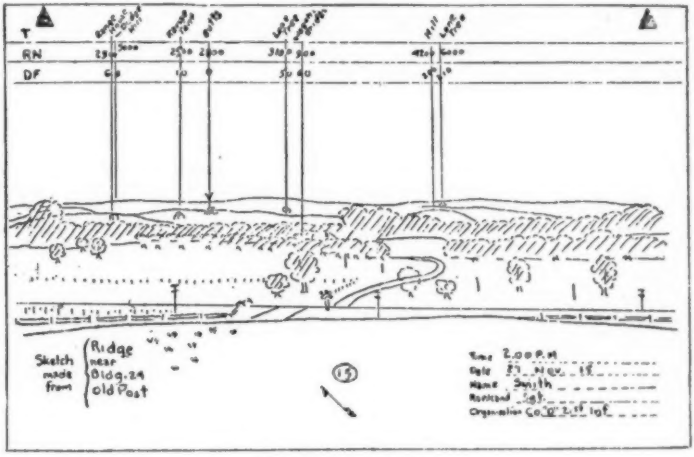
elements of perspective, which are its foundations. This knowledge, however, may be acquired during actual practice, while sketching from nature.

Military landscape sketching differs in important characteristics from purely artistic work. The effect and harmony of the sketch is entirely secondary to the delineation of the military features to be portrayed. Accuracy, simplicity, the elimination of details not of military importance, a correct generalization of the background and, above all, an easy comprehension at a glance, are the essentials of a military landscape sketch.

Landscape sketching presents the country in elevation instead of in plane. It is not necessary to be an artist to produce a useful sketch. It is often better that the artistic sense be absent, and that, instead of idealizing a landscape, it should be looked at with a cold, matter-of-fact military eye.

The beginner will, at first, be confused by the mass of detail in the landscape before him. He must ignore all but the outline of the features presented. Omit even prominent details in the immediate foreground that are not of value in the sketch, such as telegraph poles, trees, etc. He must learn to leave out unimportant details. The fewer lines used, the clearer the sketch, and the less time required to make it.

A difficulty will be met in drawing the houses, trees, etc., as they are seen in the landscape. Absolute accuracy in the details of their appearance is not essential. The sketcher first re-



COMPLETED SKETCH.
FIG. 6.

produces the outline of the important military points, as skyline and crests, then fills in other details with the fewest lines possible. Use bare outlines and leave general shading alone. Unnecessary shading in a landscape sketch tends to confuse and detracts from its clearness.

The beginner will do well at first to copy other landscape drawings. By so doing, he will learn to handle his pencil and will gain confidence in himself. Then make several sketches of the same

country at different times. The ability to sketch will come with surprising facility.

A careful study of the ground before commencing to draw will assist greatly. Field glasses will define accidents and details not plain to the eye.

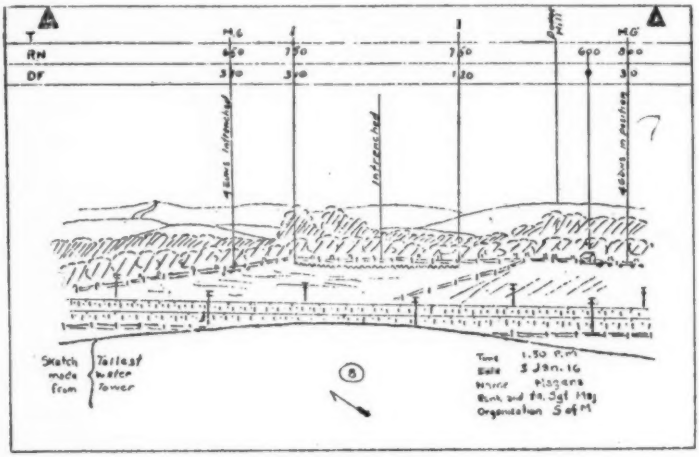
The chief difficulty experienced by the beginner is in producing the receding effect in his picture—the perspective. To overcome this, note carefully the size of the objects. Looking at the landscape, as objects are placed farther off, they appear smaller. Make them so in the drawing.

The comparative dimensions of objects near and distant may be noted by holding a pencil at arm's length before the eye and defining the limits of the object between the thumb and end of the pencil. Heavy lines will be used in depicting the foreground, medium lines objects in the middle distance, and the background sketched by fine strokes with a hard pencil.

First, draw the skyline, then work toward the front, and gradually thicken the strokes. It may be advantageous for a beginner to use three pencils of varying hardness as an H for the foreground, 3 H for middle distance and 5 H for background. Commercial pencils, Nos. 2 and 3, pointed and used with care, produce the same results and are always available. Several pencils should be carried, pointed and ready for use.

To put in woods, sketch the outline of the tree tops with a succession of short curves, then draw a broken line to show the near edge of the woods, if in relief, and fill the space between with diagonal shading. This is the only shading required in the entire landscape sketch, the result being that trees stand out among the other details.

It will be noted that woods are of great value for indicating depressions and defiladed areas. A tree on a plain or slope, in full view, will show a portion of the trunk. Trees partially concealed by ridges, show only the rounded



COMPLETED SKETCH.

FIG. 7.

top. Draw only the silhouette, or outline of the tree—do not attempt detail of branches.

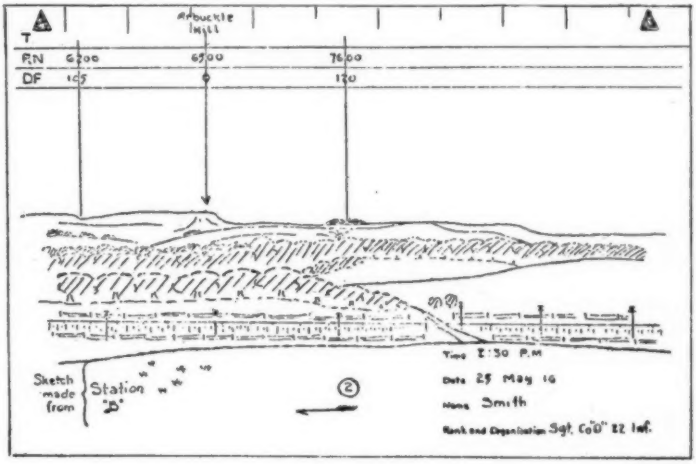
All roads are shown by two unbroken lines representing the edges, which get closer together as the road recedes, until they unite, forming one line.

Do not attempt to show unimproved roads and trails by dotted lines, as on contoured sketches—use solid lines and place any explanatory data in the T-section at the top of the paper.

importance of a sharp point to his pencils, and keep several always ready for use.

b. The next step should be the drawing of imaginary landscapes. This is excellent practice. Skylines and intermediate crests can be drawn, and troops of all arms placed in position.

c. Select a sector convenient to quarters, and sketch the same landscape at least once a day until the result is satisfactory.



COMPLETED SKETCH.

FIG. 8.

Draw only the outline or silhouette of buildings.

Practice in Landscape Sketching

37. *a.* A beginner in landscape sketching should first copy some typical sketches. He will thus learn how to handle his pencils, the relative weights of the lines in foreground and distance, and the extreme small size of the few conventional signs used to represent troops. He will also appreciate the

d. Select other landscapes for practice.

e. Allow ten minutes for the completion of a sketch.

The School of Musketry Sketching Pad

38. A pad of specially ruled paper has been designed for use in landscape sketching at the School of Musketry. (Fig. 1.)

The sheets are 8½ x 5½ inches. Vertical lines in light blue cross the paper.

These vertical lines are of value as guides in dropping features of the landscape, located over the top of the paper, down to the sketch strip.

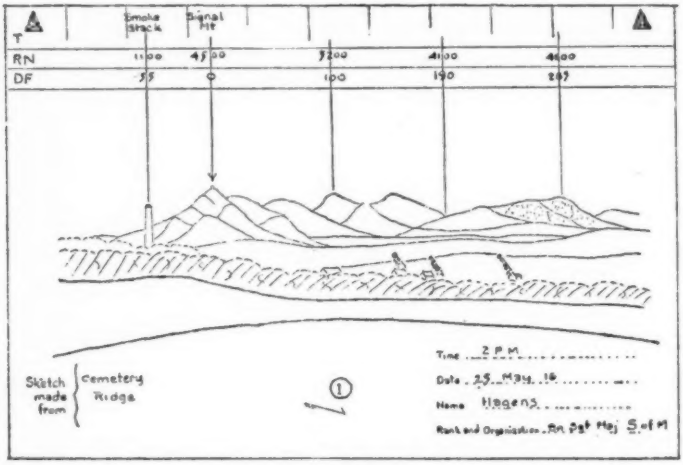
The intercept between these vertical lines equals the 50 mils division of the Musketry Rule. A cord run through the metal eyelet set in the center of the backing near the top, and knotted at 15 [1] inches is used to insure the paper being held at the same distance from the eye each time the pad is oriented. With this length of cord, the interval between the vertical lines subtends 50 mils.

(Note: The pads used during the Spring term, 1916, were ruled with vertical lines at ½ inch interval. In this case, a ten-inch string caused the intercept to subtend 50 mils, and a 20-inch string, 25 mils.)

Four horizontal lines, also in light blue, and at half-inch intervals, are drawn just below the center of the sheet, the four enclosing a strip 1½ inches in width. This strip marks the vertical limits of the sketch.

At the top of the paper are two heavy orientation marks and three horizontal black lines defining divisions marked for the Target, Range, and Deflection.

On the left, below the picture strip, is a place for a description of the position from which the sketch was made. In the center, is a circle to contain the number of the sketch and to indicate its position. By the side of this circle, an arrow with one barb is drawn to show the magnetic north. On the right are spaces for the time, date, name, rank, and organization of the sketcher.



COMPLETED SKETCH.
FIG. 9.

[1] To use the vertical lines as a mil scale, this distance of 15 inches must be accurate. A cord threaded through the cardboard backing and running over the top of the pad at the center, knotted at 15 inches will insure this distance.

Making the Sketch

39. 1. Hold the sketching pad in front of the eyes, facing the sector, upper edge of paper horizontal, the cord knot in the teeth.

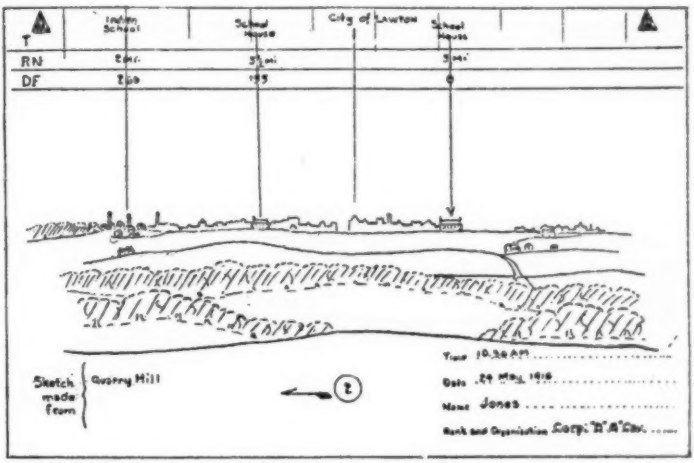
2. Close one eye, and move the paper laterally until the sector desired is included between the two orientation marks.[2] The paper is now oriented.

3. With the paper thus oriented, the points or objects in the sector are visible along the upper edge, appearing in their proper relative positions, horizontal and vertical.

4. With a pencil, place a mark near the upper edge of the paper opposite the most prominent points or objects in the sector. Marked features on the skyline are located first, as they aid materially in placing other points in the drawing.

5. The lateral location of points on the skyline being thus determined, place the paper on the knee or other convenient support and transfer the marks from the upper edge to the "sketch section" of the paper. Commence with the mark opposite the highest point, which is placed *on* the first blue line. This determines the highest part of the sketch. The marks locating other features are transposed in their relative vertical and horizontal positions.

6. Draw the skyline, lightly, by connecting the transposed marks. This will give the horizon in profile.



COMPLETED SKETCH.

FIG. 10.

7. Other points, crests, targets, etc., are now entered in the same manner, reorienting the paper when necessary. With practice, the other features of the landscape may be drawn in without reorientation, once the skyline has been located on the sketch.

8. The immediate foreground is indicated by a very heavy line above the circle. This may be made by using the side of the pencil point.

By this method, the lateral proportions of the sketch will be fairly accu-

[2] If the desired sector is too broad to be included between the orientation marks, the field may be covered by making two sketches, or by holding the pad closer to the eye. In the latter case the vertical lines will subtend more than 50 mils, and the deflection must be determined with the Musketry Rule.

rate. The vertical should be slightly exaggerated. No effort need be made to effect this, since most sketchers will do so unconsciously.

In addition to the skyline, important crest lines and other features will be sketched in, especially within the area of advance. The position of fences, roads, walls, and woods, of possible military value, must be included. Features of the foreground are omitted unless of military importance.

No effort should be made to obtain purely artistic effect.

Avoid detail. Show buildings, woods, trees, and other features only in the outline of the silhouette.

The only shading is used in denoting woods.

Military Data

40. 1. A Reference Point is selected from the prominent terrain features of the sector. This must be an object easily recognized by another person using the sketch.

The reference point is identified on the sketch by a vertical line drawn from near the top of the paper, stopping just above the point or object. An arrow head is drawn at the lower end of this line and a zero (O), is bisected in the deflection (DF) section. Even when the enemy is very distinct a reference point is designated as the enemy may move or disappear.

2. In the T-section at the top of the perpendicular is entered the name or description of the reference point and all other objects identified, including the letter denoting the nature of the target (I. A. C. M. G.). Conventional names such as "May," "June," "July," may be assigned to important terrain features in the absence of known names.

3. Targets are accurately located on the sheet by the use of conventional signs.

Infantry ∧∧∧∧∧∧∧∧∧∧∧∧∧∧	I
Cavalry ∧∧∧∧∧∧∧∧∧∧∧∧∧∧	C
Small Detachments ∧∧ ∧ ∧∧∧	I or C
Artillery ±±±±±±±±±±	A
Machine Guns	M. G.

In addition to these conventional signs, the location is emphasized by a perpendicular dropped from the "T" line. At the top of this perpendicular, the abbreviation I. C. A., or M. G., further indicates the nature of the target.

In case the target or position shown has marked linear dimensions, as infantry deployed, a perpendicular is dropped to each end of the line occupied.

4. Information concerning the target, and nothing else, is written vertically upon the sketch along the perpendiculars in the broad space between the sketch and the DF line.

For example on perpendiculars headed

I
4 Plat. col. advancing.
Entrenched.
Column, moving east.

C
Led horses.
Moving north.

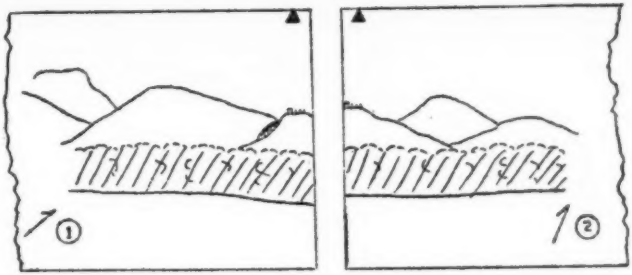
A
4 guns in positions.
Limbered.

M.G.
4 guns in positions.
Moving west.

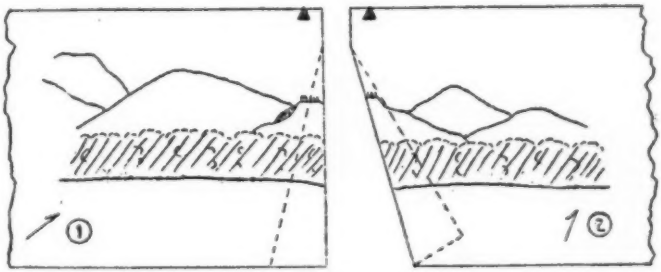
The note on the perpendicular should state the strength, formation, and whether in position or in motion; if the latter, the direction taken.

Give the length of target or enemy line in mils. This measurement should be accurate within 10 mils.

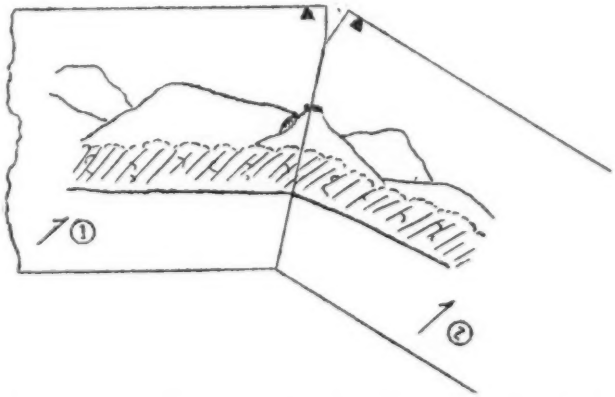
Do not assign organizations to the enemy, as Company, Battalion, Troop, etc., unless positive this information is



FIRST STEP IN JOINING. TWO SKETCHES SHOWING SAME TERRAIN FEATURE NEAR ADJACENT EDGES.



SECOND STEP IN JOINING. CORNER OF SKETCH ON RIGHT FOLDED THROUGH CENTER OF RESERVOIR HILL PREPARATORY TO PLACING OVER SKETCH ON LEFT.



THIRD STEP IN JOINING. TWO SKETCHES JOINED. PIVOTED ON COMMON POINT, ARROWS PARALLEL.

FIG. 11.

correct. State the arm and give length of line observed in mils.

5. Range estimated or measured is entered in the RN space, across the perpendicular, indicating the target or object. The method of determining the range is written after RN—"Estimated" or "Measured."

6. The deflection in mils from the reference point is determined either by use of the vertical lines on the pad or by means of a mil scale and entered in the DF space across the perpendicular indicating the target or object. This deflection should never be in error more than 10 mils. Place a reference point on each sketch. Do not carry the deflection across several joined sketches. The sketch containing the first reference point may be lost, and thus make the others valueless. Each sketch must be complete in itself.

7. The location of the sketcher is described by using the name of a ridge, knoll, etc., or by giving the direction and distance from a known point, as

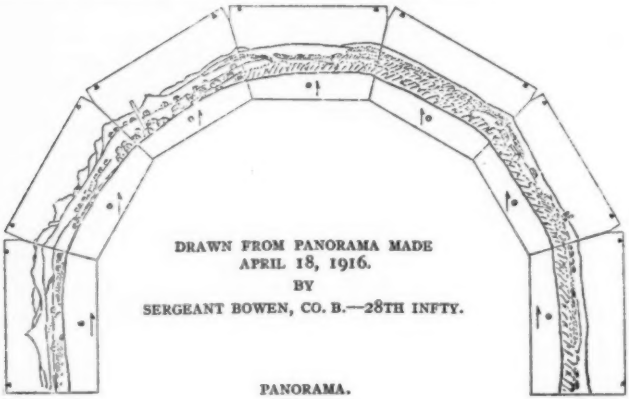
"Evans Knob," or

"Ridge 400 yards west Apache Gate."

These data are entered in the lower left hand corner of the sketch.

8. The sketches are numbered serially within the circle at the bottom of the pad. The location and direction illustrated on a route sketch are identified by the corresponding number in a circle with an arrow indicating the terrain sketched.

9. The compass bearing is shown by an arrow with one barb, drawn beside the circle. To determine its direction, orient the sketch in a horizontal position with the "vertical" line marking the reference point pointing toward the reference point. Then draw the arrow parallel to the compass needle, barb toward the north.

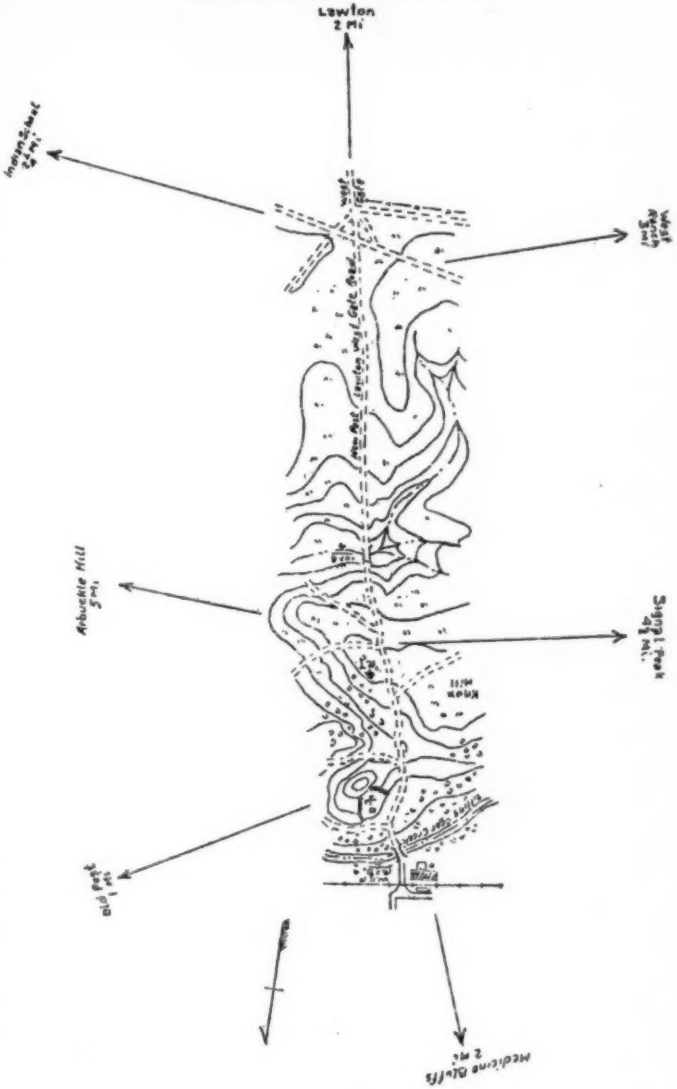


PANORAMA.
FIG. 12.

10. The time, date and signature entered on right of the circle completes the sketch.

If preferred the paper can be oriented by holding the sheet about 12 inches from the eye, and by moving the paper back and forth until the orientation marks coincide with two selected terrain features preferably on the skyline. In this case the deflection in mils must be determined by use of a mil scale and the vertical spacing on the paper be ignored when entering deflections from the reference point. The value of the intervals in mils (50) is correct only when the pad is held at the

ROUTE SKETCH WITHOUT MARGINAL SKETCHES.



-50-

FIG. 13.

proper distance from the eye, 15 inches.[3]

In making a hasty sketch on any paper at hand, the deflection in mils is ascertained with a mil scale, or approximated by using the gun sight, fingers, or the trigger guard of a pistol. Every patrol leader and every officer in a battalion should carry a musketry rule as part of his field equipment.

Joining Sketches

41. Several sketches will often be made from one position for the purpose of showing more terrain than can be included on one sketch.

Whenever two sketches are to be joined, the same terrain feature must appear on each—near the left edge of one and the right edge of the other. When given a terrain too wide to be included in one sketch, the procedure is as follows:

Make a complete sketch, including the terrain from the left, for example, as far as the paper will permit toward the right, noting an object approximately beneath the right orientation mark and preferable on the skyline. The next sketch will commence with its left orientation mark over the feature noted on the right of the preceding sketch—this feature appearing on both sketches. This repeating of a feature on two adjacent sketches is continued until the required sector of terrain is covered—up to a complete panorama of 360°. (Fig. 11.)

A series of seven sketches may be made, for example, from one position, giving a panorama of 180°. If this panorama extends from the east through the north to the west, the arrow on the first sketch indicating the magnetic bearing will lie parallel to the bottom of the paper pointing to the observer's right, the arrow on the fourth sketch (looking north), will lie at right angles to the lower edge of the paper pointing toward the top, and the arrow of the last sketch (looking west), will lie parallel to the lower edge of the paper, pointing to the observer's left. The arrows of the second and third sketches will occupy intermediate positions with reference to the lower edge of the paper between those of the first and fourth sketches, and the arrows of the fifth and sixth sketches intermediate positions between the fourth and seventh. (Fig. 12.)

In assembling to form a panorama, the sketches are placed in order on a flat surface with all the arrows parallel. In the above example, a panorama extending through 180°, the sketches form a semicircle. (Fig. 12.)

In "joining" two adjacent sketches, the corner of the right sketch, for example, is folded under in a line through the center of the common feature. (The fold usually strikes the lower edge of the paper about an inch from the corner, and the right edge about ½ inch from the top.) Place the folded sketch over the other, so that half the common feature will be visible on each sketch, and with this common feature as a pivot, turn the right sketch until the arrows of both sketches are parallel. The crests and other features of the two sketches should meet approximately along the edge of the fold. The position of the right sketch folded under will depict the identical terrain it covers on the left sketch. (Fig. 11.)

As landscape sketches are made rapidly and with a free hand, some adjustment of data will usually be neces-

[3] Distance of pad from the eye. The pad designed for use at the School of Musketry is ruled with vertical lines subtending 50 mils when held 15 inches from the eye. This interval was selected as a matter of convenience to the student, conforming to the divisions on the Musketry Rule.

ROUTE SKETCH ILLUSTRATED BY MARGINAL SKETCHES.

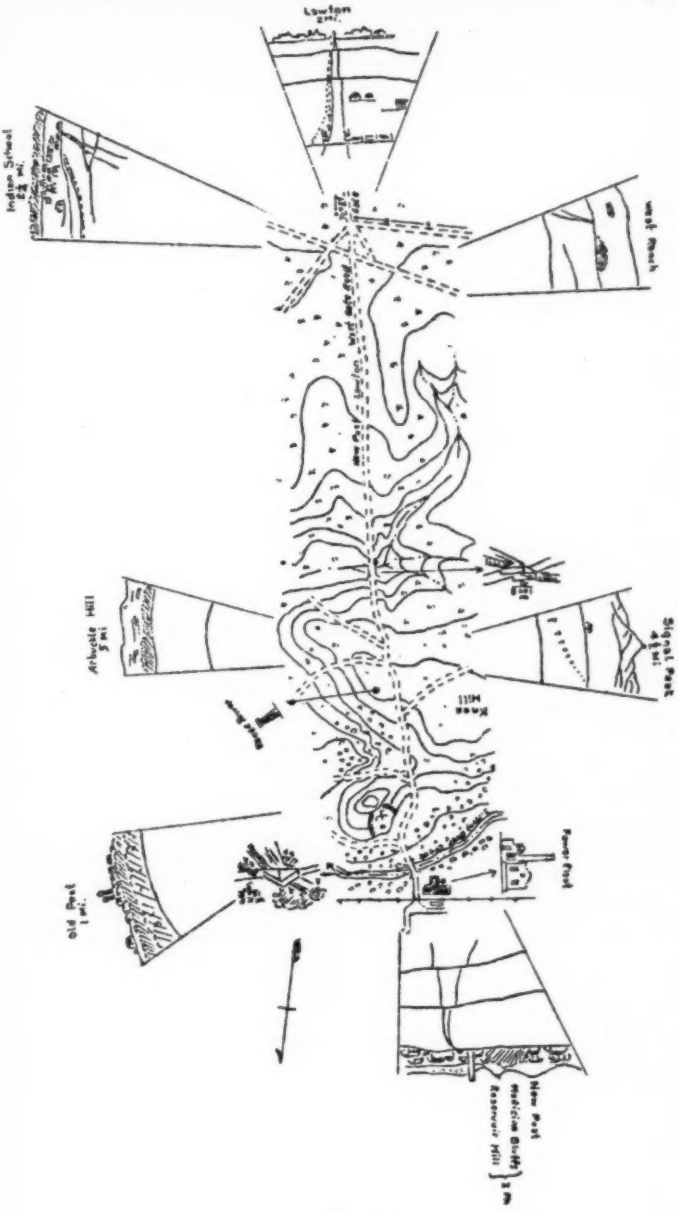


FIG. 14.

sary to secure unbroken lines where the sketches meet. The joining should be checked on the ground and corrections made without hesitation.

When several joined sketches are necessary to show the location of related targets, each sketch should be complete in itself with reference points, deflections, etc.

The sketches will be joined as chords of a circle, and not arcs. This is because the successive sketches are drawn on flat surfaces, and between straight horizontal lines. A panorama will therefore consist of a series of sketches joined by slight angles. This will be found to interfere little with the accurate representation of the terrain. (Figs. 11 and 12.)

Mechanical Aids to Landscape Sketching

42. There are several other methods used in the instruction of beginners in landscape sketching. Many of these require special apparatus not always available for use in the field.

One system requires a frame bearing a number of vertical and horizontal cross-wires which is placed in the ground at such a distance before the eye as to intercept the sector to be sketched. The paper used is ruled in rectangles, corresponding exactly to those intercepted by the wires of the frame. This method is accurate, but in practice has been found to develop a tendency toward filling in each rectangle with detail. This results in slow, painstaking work instead of the rapid free-hand sketching essential in reconnaissance.

Another method of use in learning to sketch is the following: A piece of wire gauze, of mesh large enough to admit the point of a pencil, is cut exactly the size of the paper used. To locate the critical points of the landscape on the paper, hold the gauze out before the eye, orienting it on the main reference point or other selected features of the landscape. Place the pencil point in the gauze at the feature to be recorded, lay the gauze on the paper, thus locating this point. Do the same for the other prominent features of the terrain. It will be found advisable to first locate the points along the skyline and complete this portion of the sketch first. Then locate and sketch in the features of the middle and foreground. The gauze must be carefully oriented every time a point is located for transfer to the paper. For this purpose, permanent orientation marks should be placed on the gauze. A string attached to the center and held in the teeth will help in reorientation. This method will be of assistance to men who find difficulty in transferring points from the upper edge of the paper to the proper place in the sketch. The principle is very simple, and the result should be an accurate sketch. This scheme does not demand specially ruled paper and no apparatus except the gauze.

These two methods are mentioned as of possible interest to encourage men who find landscape sketching difficult at first. The confidence engendered by the results attained from the use of these or similar aids to sketching will soon enable a man to draw with no assistance other than pad, pencil, and eye. Any method is satisfactory that will produce results.

The system of landscape sketching described in detail in this pamphlet has been carefully considered and tested. It is believed that little difficulty will be encountered in its use. The pads prepared for use in this work at the School of Musketry are designed for men first attempting this important and heretofore neglected item in the military education of the professional soldier.

Hints for Service at Training Camps

By 1st Lieut. O. O. Ellis, Infantry

IT is probable, judging by one or two instances at Plattsburgh in 1916, that an efficient officer upon reporting at a Federal Training Camp and being at once assigned to the command of a company, may fail to grasp at once the intensity of the instruction. Within a few days he may be embarrassed to find his company behind in the schedule of drills which is so progressive that there is no opportunity to give a backward company additional instruction. Furthermore, the men who attend these camps are of such mental calibre that they are quick to realize the situation when their company is getting behind in its instruction. They are then apt to lose confidence in their company.

It is the purpose of this article, therefore, to tell what was accomplished at the Plattsburgh Training Camp in 1916 and how it was accomplished, in such a way that any officer, who has not attended one of these camps, may know the amount of instruction that must be imparted to a war-strength company of rookies during the short period of one month, and may profit by the experience of the officers on duty at Plattsburgh in 1916.

The Schedule of Instruction and List of Calls which follow will give the reader an idea of the amount of ground covered and of the time devoted to daily drills and lectures at Plattsburgh from July 12 to August 8, 1916.

July 12.

Morning—Organization of camp—Reporting—Assignment—Issue of clothing and equipment.
Afternoon—Reporting, etc., continued—Organization of companies into squads and platoons—Permanent assignment to tents.
Evening—Talk by camp commander.

July 13.

Morning—Physical drill—I.D.R. to paragraph 133—Care of rifle and equipment—Physical examination.
Afternoon—Same as morning.
Evening—Talk by camp surgeon.

July 14.

Morning—Physical drill—I.D.R. to paragraph 198—Physical examination.
Afternoon—Same as morning.
Evening—Conference.

July 15.

Morning—Drill I.D.R. to paragraph 257—Administration of typhoid prophylactic.
Afternoon—Same as morning.

Sunday, July 16.

Morning—Administration of typhoid prophylactic.
Afternoon—Same as morning.

July 17.

Morning—Physical drill—I.D.R. to paragraph 257.
Afternoon—Elective instruction—Position, sighting, aiming, drills—Gallery practice.
Evening—Conference.

July 18.

Morning—Physical drill—Company combat I.D.R. to paragraph 289.
Afternoon—Same as July 17th.
Evening—Conference.

July 19.

Morning—Physical drill—Company combat. I.D.R. 212-257.
Afternoon—Elective instruction—Position, sighting, aiming drills—Gallery practice.
Evening—Conference.

July 20.

Morning—Physical drill—6th Training regiment, march security by company, I.D.R. 623-660.

Afternoon—6th Training regiment, range practice—7th Training regiment, same as July 19.
Evening—Conference.

July 21.

Morning—Physical drill—6th Training regiment, range practice—7th Training regiment, camping and camp protection by battalion, I.D.R. 678-707; 792-798.
Afternoon—Same as July 20.
Evening—Conference.

July 22.

Morning—Physical drill—6th Training regiment, range practice—7th Training regiment, company combat, attack and defense, I.D.R. 389-536—Administration of typhoid prophylactic.
Afternoon—Same as July 20 and in addition administration of typhoid prophylactic.

Sunday, July 23.

Morning—Administration of typhoid prophylactic.
Afternoon—Same as morning.

July 24th.

Morning—Physical drill—6th Training regiment range practice—7th Training regiment, battalion combat, I.D.R. 290-326.
Afternoon—Same as July 20.
Evening—Conference.

July 25th.

Morning—Physical drill—6th Training regiment, march security, by company, I.D.R. 623-660—7th Training regiment elective instruction.
Afternoon—6th Training regiment elective instruction—7th Training regiment range practice.
Evening—Conference.

July 26.

Morning—Physical drill 6th Training regiment camping and camp protection, by battalion, I.D.R. 678-707; 792-798—7th Training regiment range practice.
Afternoon—Same as July 25th.
Evening—Conference.

July 27.

Morning Physical drill—6th Training regiment, company combat, attack and defense, I.D.R. 389-536—7th Training regiment range practice.
Afternoon—Same as July 25th.
Evening—Conference.

July 28.

Morning—Physical drill—6th Training regiment, battalion combat, I.D.R. 290-326—7th Training regiment range practice.
Afternoon—Same as July 25th.
Evening—Conference.

July 29.

Morning—Physical drill—Company combat, companies paired—Administration of typhoid prophylactic.
Afternoon—Administration of typhoid prophylactic.

Sunday, July 30.

Same as July 23rd.

July 31.

Morning—Physical drill—One battalion of each regiment in defense; two battalions in attack.
Afternoon—Elective instruction.
Evening—Conference.

August 1.

March and Maneuvers.

August 2.

March and Maneuvers.

August 3.

March and Maneuvers.

August 4.

March and Maneuvers.

August 5.

March and Maneuvers.

Sunday, August 6.

March and Maneuvers.

August 7.

March and Maneuvers.

August 8.

March—Turning in of equipment—Discharge.

List of Calls.

Reveille, 1st call	5.45 A.M.
March	5.55 A.M.
Assembly	6.00 A.M.
Mess, 1st call	6.25 A.M.
Assembly	6.30 A.M.
Sick call	7.00 A.M.
Drill, 1st call	7.20 A.M.
Assembly	7.30 A.M.
Recall	11.30 A.M.
Mess, 1st call	11.55 A.M.
Assembly	12.00 A.M.
Instruction, elective.	
1st call	1.20 P.M.
Assembly	1.30 P.M.
Recall	4.00 P.M.
Parade, 1st call	5.00 P.M.
Assembly	5.20 P.M.
Adjutant's call	signal.
Retreat, 1st call	5.10 P.M.
Assembly	5.20 P.M.
Mess, 1st call	5.55 P.M.
Assembly	6.00 P.M.
Conference, 1st call	6.50 P.M.
Assembly	7.00 P.M.
Recall	8.00 P.M.
Call to quarters	10.00 P.M.
Taps	10.30 P.M.

The expression "elective instruction" is misleading, for only the second year men were allowed to take elective work and they, except those electing to take advanced infantry, were, after the second or third day, transferred from the companies and dropped from the morning reports. So the term "elective instruction" means afternoon drill.

Between assembly for retreat and supper, a drill lasting one-half an hour was required. Hence, the daily instruction was made up to seven and one-half hours' drill and one hour conference.

This data, indeed this entire article, deals only with the infantry commands.

The two days preceding the opening of each Camp should be spent in placing cots, mattresses and pillows, all properly arranged, in each tent, and in making up about 120 barrack bags. Each barrack bag should contain all the clothing and quartermaster property which is to be issued to one man. For this, and similar work during the camp, two Coast Artillery noncommissioned officers were permanently assigned to duty with each training company.

The first day of each Camp demands about sixteen hours of hard work on the part of the company officers if, as required at Plattsburgh in 1916, the companies are to be uniformed, equipped, tented and organized ready for drill by the morning of the second day. On the first day of each Camp the company commander must receive from 110 to 130 men, assign them to tents according to height and answer one thousand and one questions.

One regular noncommissioned officer issued the barrack bags previously referred to and the other one issued the ordnance property.

A model showing how beds should be made up and equipment arranged under them was placed in the company street and each man required to arrange his bed and property in the same way.

The following system was found to be most satisfactory in assigning 120 men to tents or squads:

1 tent,	occupants	over 6 feet
2 tents,	occupants	6 feet
2 tents,	occupants	5 feet 11
2 tents,	occupants	5 feet 10
3 tents,	occupants	5 feet 9
2 tents,	occupants	5 feet 8
1 tent,	occupants	5 feet 7
1 tent,	occupants	5 feet 6
1 tent,	occupants	under 5 feet 6

Eight men were assigned to each tent. Each man upon reporting was required to step under a measuring board and was assigned to his height to a tent.

The discipline and esprit of a company seems to be shaken to its very foundation if any attempt is made to change tent mates by reorganizing the company, once the men in a tent have become friends. These ties of friendship seem to form the moment a lonesome rookie lugs his suit case, quartermaster and ordnance property to a tent and is met by the remark, "My name is Jones, we appear to be in the same boat, let me help you arrange your property." To separate these two men the second or third day and assign them to tents where they must again become friends with strangers is to them an unnecessary hardship. This method of assigning men to tents according to height, avoided the necessity of reorganizing the company for drill.

When eight men had been assigned to a tent, it was at once necessary to appoint a man to act as temporary corporal. All things being equal in regard to previous service, it was found best to appoint as acting corporal one of the older men, preferably over thirty years of age. In the senior regiments, the age

of the men ranged from about nineteen to fifty.

The men came to Plattsburgh filled with enthusiasm, which, when not allowed to wane, was easily converted into company spirit. It was only necessary to ask 120 enthusiastic men to assist in making their company the best shooting company or the "snappiest" drilled company and enthusiasm became at once company spirit. Then, if a company commander himself remained enthusiastic and displayed his enthusiasm by work, an efficient company was created. Most of the companies at Plattsburgh in 1916 were imbued with this esprit de corps and it was not unusual to see several squads of a company drilling voluntarily under the electric lights until call to quarters, and sometimes getting up before reveille to drill or have gallery practice. On such occasions a company officer might be seen among the squads, helping first one and then another.

Without the spirit referred to in the preceding paragraph, it would have been impossible to accomplish the results with which the remainder of this article will deal. Let the reader not forget that a Plattsburgh company in 1916 contained about 120 men, all intelligent and eager to learn. In instructing them it was not necessary to repeat and reiterate as is necessary with less intelligent men. These were men, in many cases, sufficiently interested to buy text books and study them in connection with the daily drills. To satisfactorily cover, in one day, the first 133 paragraphs of the Infantry Drill Regulations was, of course, an impossibility. The greater part of the time was spent in perfecting the company in the execution of the most important and essential movements. Such important movements as, "Change step, to march to the rear or by the flank" were explained and executed once and the men were then told to perfect themselves in their execution individually out of ranks. The interest manifested by the men in this individual work made possible the remarkable efficiency finally attained. At first all company officers went too much into the details of each movement. They soon found themselves behind the schedule and it became evident that the rough edges could be knocked off and a reasonable perfection attained by utilizing the half-hour drill period just before retreat, and a few minutes at each meal formation for this purpose.

The companies attained a degree of efficiency which was surprising to even the Camp authorities. The degree of perfection finally reached in close order work, less platoon movements and double time, compared favorably with the average performance of a war strength company of Regulars.

In the actual execution of the mechanism of the deployments and of the firings, the companies did not become as efficient as in their close order work. Yet the knowledge acquired, not by a few but by all, of the uses of the different extended order formations and of the employment of troops in battle can undoubtedly be recorded as one of the real achievements of the Camp. Here again, the interest and superior intelligence of the students made this extended order and field work intensely instructive.

After the general conference, it was usual, but not prescribed, for the company commander to give a talk in the company street. For example, the extended order movements for the next day and their application to terrain or combat exercises were carefully ex-

plained. References in the text-books, for use should the talk not be clear on all points, were always given. When the companies left camp each morning every man was conversant with the tactical principle which the maneuver or problem was to illustrate.

Four to six days only were allowed for target practice, *i.e.*, for actual shooting on the range. During this practice each man fired a few preliminary shots and then fired the militia course for qualification. Coaching was allowed at all times. Between fifty and sixty per cent. of the men qualified as marksmen or better. The rank and file of the men attending the Camp had never before fired a rifle and their record must testify to their remarkable ability to understand and apply instructions. Every officer who patiently, persistently and personally devoted every spare moment to instructing his men in shooting and in the preliminary drills was certainly well repaid by the effort and record of his company.

It was found best to lay most stress on the cardinal principles of shooting and not swamp the beginner with a multitude of fine points which he could not master in so short a time.

The companies that fired the most .22 ammunition and hence did the most gallery practice invariably led when the firing records were compiled. In fact, their supremacy was so unquestionable that the value of intelligent gallery practice should not hereafter be underestimated during such a course of training as was given at Plattsburgh.

During the gallery practice work, the student was not allowed to merely shoot for a certain score, but a coach was assigned to each firing point and the firer's position, use of sling, breathing, manner of squeezing the trigger, etc., were carefully observed and corrected. Time was so limited that this part of a soldier's preliminary instruction was combined with his gallery practice instruction and firing, with most unexpected success.

For about ten days prior to the practice march, the full pack, less rations, was carried during all marching drills, so that at the end of this period the men had become so accustomed to them that they were soon forgotten. This fact was repeatedly commented upon at the conclusion of a four-hour drill. Hence, when the practical march commenced, the men had lost their fear of the pack. The practice march was, so to speak, "graduating exercises." It was severe enough to necessitate the control of mind over tired muscles, which experience was a new one to many of these business men.

A voluntary company conference in the evening for the purpose of discussing the morning problems would draw and hold until tattoo practically every man in a company. Many company commanders used these voluntary conferences to drive home simple, sound, tactical principles and to give instruction on march and camp sanitation. Every man appeared to be filled with the desire to know what war demands of the private soldier. This interest on the part of the students was forcibly impressed upon the writer one afternoon after a hard, morning march and maneuver, when his repose was interrupted by the appearance in front of his tent of a committee from his company with the request that the company be instructed in bayonet fighting. Over one-half of the company had volunteered to take this additional instruction during the afternoons, stating that they did not want to leave Plattsburgh

totally ignorant of this part of a soldier's education if it was possible for the company commander to find time to give it to them.

The attendants were not allowed to leave Plattsburgh thinking that they had become trained soldiers after one month of service. It was constantly impressed upon them that there were many phases of a soldier's training in which they had not been instructed. They were made to realize that the limited instruction imparted to them was barely a beginning, but they were told that they were of more military value to the government for having this training.

Perhaps the greatest value of the Camp was an educational one. It was the constant effort of all officers on duty at Plattsburgh in 1916 to explode, by showing the extent of a soldier's instruction, the commonly accepted myth that an Army can be created in this country between sunrise and sunset. Repeated and forceful presentation of our military history, our lack of military policy, the unnecessary waste in blood and treasure of our wars, the magnitude of modern war, and our condition as to organization, equipment, and trained men, in the light of our recent border mobilization of the militia, was a revelation to these patriotic taxpayers who, to a man, departed from Plattsburgh at least thinking intelligently about the defenses of their country.

Varied Ground

Class Standing as an Index of Worth.

To those who may have read the editorial in the February number of the INFANTRY JOURNAL, the following letter from Captain Steese will doubtless prove of interest.

While we believe that the exceptions taken to statements in Captain Steese's original discussion were not without foundation, we would not have them befog the main point, on which we are in entire accord with Captain Steese. We join with him in the hope that discussion of the subject may bring about a reform in the very important matter of the distribution of honor men of the Academy to the line of the Army.

TO THE EDITOR OF THE INFANTRY JOURNAL:

Will you please permit me to correct several errors in your (February) editorial comment on my paper in the January JOURNAL of the Military Service Institution?

In indicating that of the 13,700 living alumni . . . only 98 were enrolled in *Who's Who*, you entirely misread my statement that "5.4 per cent of those who graduated in the first tenth of their classes are included . . . and only 1.8 per cent of those . . . in the fourth *tenth*." I took my figures from President Foster's article, and have no data on the other $^{8}/_{10}$ of the classes. About $^{1}/_{2}$ of the living alumni, of course, are men too young to have reached eminence. The statistics are necessarily incomplete, but I stated that all give the same conclusions, though in different degree, and there are no exceptions in any college records anywhere.

Who's Who (International) and *Who's Who in America* were only two of my criteria and accounted for only four of the nine examples I selected from President Foster's list. You imply that *Who's Who* is not "unwarped" by commercial motives. In this President Foster is my authority and I think your implication should be corrected unless you have actual evidence that undeserving people have bought their way into this list. There are minor publications, such as *Who's Who on the Pacific Coast, Who's Who in Pennsylvania*, etc., whose standards are not so high, but they are under different management.

With regard to ages of graduates, your statement is exactly contrary to the facts. The four years here is long enough for the bright young man to pull ahead of the stupid older man regardless of the previous training handicap. I have not had time to complete my statistics, and I do not believe the age question has any important bearing on the result. However the average age of the first ten men in all of the six classes 1902–1907 upon entrance was 19 years and 3 months, of the last ten, 19 years and 10 months; for the five classes 1912–1916 upper men, 18 years and 11 months, lower men, 19 years and 5 months. Of these eleven classes, in only one case, 1913, were these values reversed and then there was only one month's difference.

I hope later to have time to investigate your query as to the relative longevity of upper and lower section men. It is of interest to record in this connection that President Foster found a much higher mortality among those who drop out of college as compared with those who graduate.

In selecting the attainment of *general rank* as my criterion of Army success. I did not imply that all general officers were chosen solely upon merit I distinctly stated that because they were

not was, in my opinion, the reason there were not a larger proportion of honor men among the general officers, in accordance with civilian statistics.

I am surprised that you should advance the cadet myth of section marks at the Military Academy; your charge is quite unfair to West Point. Even were the facts as you state, nevertheless, with such frequent transfers and written recitations, it could not result in keeping a man below where he belonged for the entire four years' course. As a cadet, I have recited in the 1st section and in the last section; as an instructor for four years, I have taught all sections, including the 1st section, with a couple of goats in it, and the goats with a couple 1st section men among them. It is my fully matured opinion that the conditions are exactly reversed. The first section man does 3½ problems without assistance while the goat does 1 or 1½ with assistance. The same ratio holds in French and Spanish dictation, etc. The first section man gets a 2.9 if he makes the slightest slip in a minor detail; the goat gets a 2.2 or a 2.3 for a board covered with yellow chalk-marks and actually worth about 0.7.

I agree with you on the other points you raise, and also agree with you that they probably have little effect on the general conclusions, on which last we are also agreed.

For the benefit of those of your readers who may not have seen my original paper, I wish to emphasize the following *facts* therein brought out. All ratios are of course only approximate.

1. In civil life, 80 per cent of the men who stand high in their classes at High School later stand high at College, and vice versa.

2. An overwhelming proportion of the honor men at College become the honor men later in Technical or Professional School, and vice versa.

3. In all cases the percentage of men in any part of any class who attain prominence in after life is in direct ratio to their class standing. Habits of study and perseverance acquired at school persist through life, and vice versa.

4. About 10 per cent of all college graduates attain marked success in after life.

5. The same results obtain among West Point graduates, but to a less degree. Ratio of 1st man to last man about 7:1; 1st 10 per cent to last 10 per cent about 5:1; 1st quarter to last quarter about 5:2.

6. About 20 per cent of West Point graduates who resign attain marked success in after life, and about the same number of those who remain attain general rank.

I do *not* claim that 100 per cent of the honor men are perfect, nor that 100 per cent of the goats are worthless.

In conclusion, I am sorry that you did not comment upon my reference to the bearing of these statistics upon the question of promotion (or elimination) by selection. I read Col. Gerhardt's article in your January issue with great interest. If we admit that every second lieutenant who lives long enough is entitled to become a colonel, then the solution proposed would eliminate many present evils. But that, to my mind, is the fallacy of the whole situation. Under any form of competition, either in civil life or in the Army, not over 20 per cent would rise to eminence or to a position equivalent to that of colonel. Therefore, almost 80 per cent of our colonels are certain to be of inferior material. Most of them should never have gotten beyond the grade of captain, not over say 40 per cent beyond major, 30 per cent beyond lieutenant-colonel, etc. Each promotion should have been won by competition based on actual performance as it is in the German Army, where few reach field rank, and only the very best reach general rank. If a man with proper training cannot qualify as a brigadier general by the time he is 45, he never will.

While no perfect system can be devised, yet, once the principle of promotion (or elimination) by selection is granted, it will be easy to devise half a dozen schemes that will get the right man over 90 per cent of the time, instead of 80 per cent misses as under existing conditions.

I must apologize for using so much of your space, but the subject is so important, especially at this very critical formative period in our military system, that I wanted to make my position entirely clear. With you, I hope that this paper may provoke further discussion and help in starting us towards immediate reform.

JAMES GORDON STEESE,
Captain, Corps of Engineers.

The Value of Marksmanship.[1]

A good many people are under the impression that the machine gun has altogether usurped the place of the rifle in warfare, that to-day and in the days to come the average rifle shot and even the fine marksman must be ranked as of minor importance in tactics. One expert—a civilian and non-combatant as it happens—has actually committed himself to the statement that the rifle is going the way of the "white weapon," the sword, which is now little more than a symbol of military honor and dignity.

That statement, like the report of Mark Twain's death, is much exaggerated. It represents, no doubt, a too violent revulsion from the old War Office theory, which was the basis of practice before the war, that the machine gun, though necessary, was not really a weapon of first-rate consequence.

* * * *

The superiority of the Lewis machine gun to the German weapon is two-fold. Like all our guns, big and little, it is a sounder article than its German rival, is less liable to break down, and has a longer life. It is also superior in rate of fire and in power and range.

But, however excellent it may be, the machine gun has not, nor ever will, put the rifle out of count. What the former has actually done as the latter's rival was admirably summed up by a National Rifle Association expert, who said to the writer: "The machine gun may have killed quick firing to a considerable extent; it has certainly not killed quick aiming." That is to say, while the machine gun is more effective than a body of average rifle shots pumping lead against time, it has not superseded the group of good marksmen trained not to dwell upon the aim—capable of that almost instantaneous coöperation between hand and eye which is, in point of fact, the secret of success in all games and sports.

The fine marksman, the product of the Bisley bull's-eye school, makes platoon firing valuable, even if not invaluable. But as a sniper he is, and always will be, quite indispensable.

* * * *

Old criticisms of the Bisley bull's-eye school of marksmanship were confuted in their day, and are no longer taken seriously. It is true the moving body of a German is a very different mark from the bull's-eye on a target. But experience proves—in particular experience on the West Front—that the man who could get long sequences of bulls at Bisley and come out high up in the King's Prize or some other great and keenly-contested competition is the best sniper obtainable, once he has accustomed himself to the conditions of war's form of big-game shooting. He has acquired the rhythmic harmony between hand and eye, the balance of body, the steadiness of nerve, the decision and the precision, which form the basis of absolutely first-rate marksmanship.

The Bisley super-shot is to-day easily the best in the business. He is far better than the German snipers, so many of whom have been game wardens

[1] Reprinted from *The London Times.*

in the great sporting domains, rich in four-footed game, of German and Austrian territorial magnates. Townsman though he be, he is better, if only by a narrow margin, than men who have lived open-air lives in the Canadian prairies or in the Australian back blocks or on the South African veldt. He has made sniping a fine art. So, you see, Bisley has justified its existence handsomely enough.

* * * *

As a marksman the enemy has never been able to teach him anything. But the old adage, "*Fas est et ab hoste doceri*," has come into play nevertheless. In the earlier stages of the war the Germans at least held their own in the perilous sport of sniping which is being practiced every day and all day along the whole front, from the sea to the boundary of Switzerland. This in spite of their inferiority in quantity and quality of marksmanship.

They were, in the first place, rather more clever and resourceful in finding or making hiding-places. That advantage was but temporary. To-day British ingenuity has worked out all sorts of cunning ideas of concealment. The British sniper can hide himself so cleverly that you would not dream of him being there until you tripped over his lair.

But what gave the German practitioners a more lasting advantage was this—instead of beaing liable to be shifted about, as a result of being attached, each man to his battalion, the German snipers formed a separate force, the members of which were retained throughout in the same locality. The result was that each of them got to know his little patch of country by heart, every stick and stone in it, whereas his British opponent was constantly being shifted about and compelled to begin learning a new country again and again.

* * * *

What this difference of method means can be estimated by the sportsman who now has to act as his own gamekeeper and finds, perhaps for the first time in his life, how hard it is to remember even the salient natural features of, say, a bit of rough shooting. As tenant, before the war, of a boggy tract in the west of Ireland (you never knew what you and your dog would get there, the small bag was always a miscellany), the writer was reminded of this fact. He had forgotten it, in spite of the experiences of several years spent in sparsely-settled portions of Western Canada.

Now that the British sniper is attached to a particular bit of country which he learns to know like a book, he is much more successful than the German practitioner on the other side of No Man's Land. Moreover, any little thing that happens there is remembered for his benefit. A German head is seen somewhere—well, there is a chance it will happen again, because it saves time to risk exposure thus, or for some other reason, and the phenomenon and the precise spot are noted for the sniper's benefit. And the net result of all this systematic common sense is that his victims outnumber the German sniper's by ten or even twenty to one. This is but one example of the way in which our New Army has been made one of the most exquisite machines of scientific warfare which has ever been seen.

Mounting Maps for Field Use.

While no originality is claimed, it is believed that the following method of mounting maps for use in the field is not

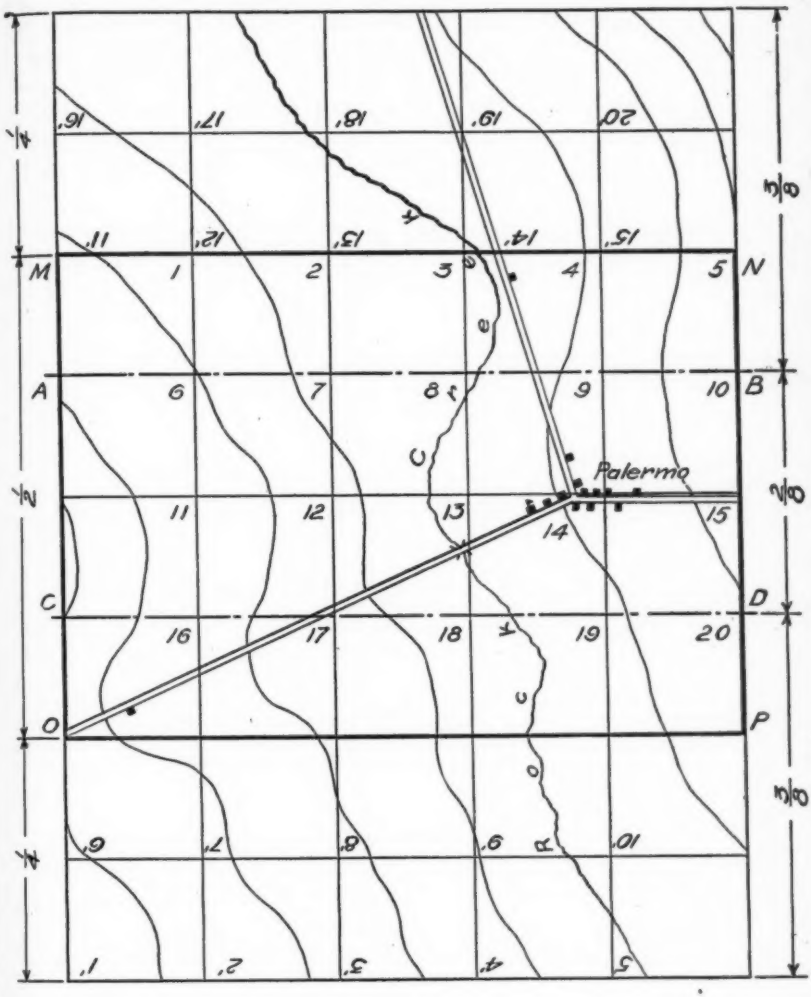


Fig. 1.

generally known to the service. This method has been found very satisfactory, especially for maps of large size, such as four or more sheets of the U. S. Geological Survey. The map is mounted on both sides of a piece of cloth, thus giving only about half the bulk obtained in mounting maps in the usual way.

First make a wooden frame with the center opening a little larger than half the area of the map to be mounted, so as to leave a convenient working margin around the map and also to allow for the spaces left between the different sections of the map for folding. It is well to have the corners of the frame secure to prevent distortion and the consequent bias stretching and wrinkling of the cloth. Next stretch some light-weight substantial cloth squarely on the frame securing it at frequent intervals with thumb tacks.

Cut the map to be mounted into rectangles of convenient size to fit in the shirt or blouse pocket (about 4½" × 6½"), dividing one dimension of the map into eights, or some multiple of eight, and the other dimension into any number of equal divisions (Fig. 1).

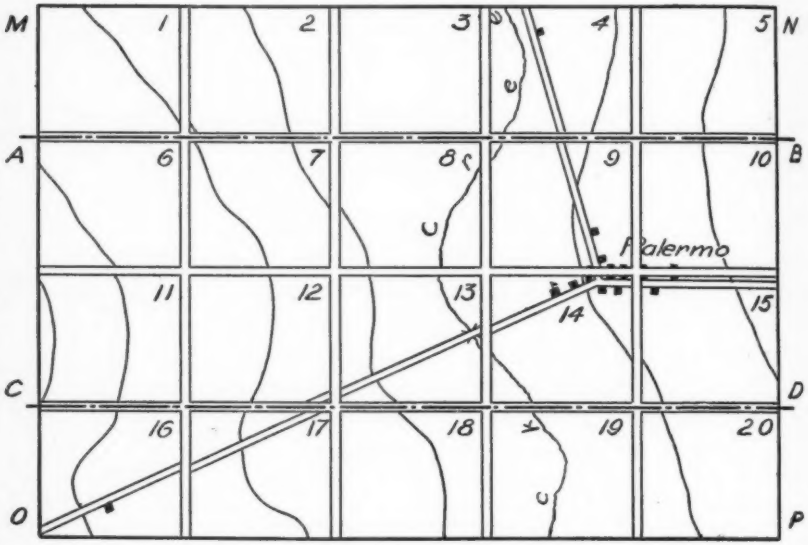


Fig. 2.

Now soak the pieces of the map in water until thoroughly saturated. If this is not done, some portions of the paper will absorb more moisture from the paste or glue than others and this will cause unequal expansion of the paper and consequent wrinkling of the map on drying.

On one side of the cloth (Fig. 2), is mounted the center half of the whole map (area enclosed by heavy lines in

Fig. 1). The upper fourth of the whole map is mounted upside down on the lower half of the reverse side of the cloth. And the lower fourth of the map is mounted upside down on the upper half of the reverse side (Fig. 3). Figure 3 represents Fig. 2 turned over as one turns the pages of a book.

Now take any section of one side, drain off the surplus water, cover the back with paste (boiled flour paste, library paste, glue or mucilage) and place it in its proper position on one side of the cloth, pressing it down evenly. Turn the frame over and in the same way mount the section which falls directly opposite the one just mounted. Mount the next adjacent section, leaving a space of about a quarter of an inch between sections for folding, and its opposite, and so on until the entire map is mounted.

Unless one is thoroughly familiar with the map to be mounted, it is well to number the different sections before cutting it up. For instance, the sections which fall on the front side of the cloth (Fig. 2) may be numbered 1, 2, 3, 4, etc., and those which fall on the reverse side 1′, 2′, 3′, 4′, etc., as follows:

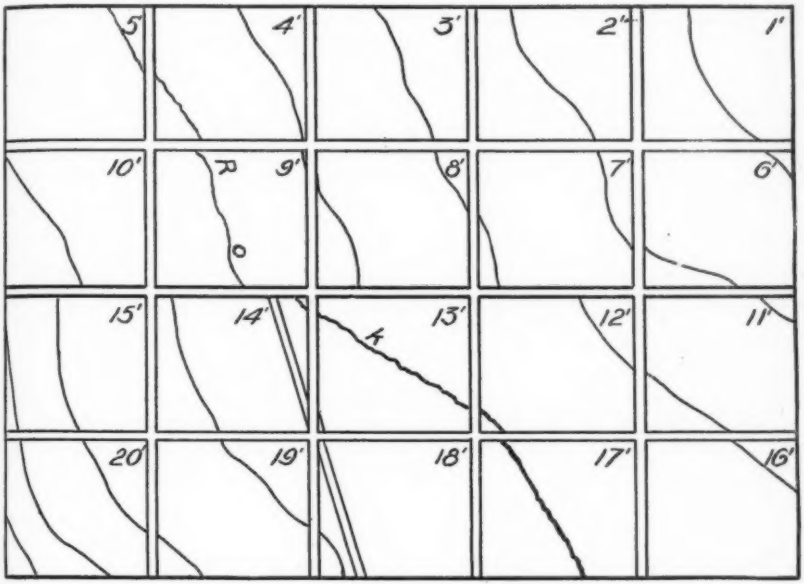


Fig. 3.

Start with the first rectangle on the left below the line M N and number from left to right in the first line of rectangles, then the second line in the same manner and so on, to include the line of rectangles immediately above the

line O P. Then turn the map upside down and starting in the then upper right hand corner number the rectangles from right to left in the first line, starting with 1′, and then in the succeeding lines in the same manner, skipping the rectangles between the lines M N and O P (Fig. 1). Then, in mounting the sections, 1′ should fall directly opposite 1; 2′ opposite 2; and so on (Figs. 1, 2, 3).

If one side is completely mounted and then the other the map will be wrinkled when it dries. This is caused by the partial drying and contraction of the first side before the other side, which will be fully expanded, is mounted. If the paper expanded and contracted evenly throughout this would cause the map simply to curl, but as different parts expand and contract unequally the map will wrinkle.

With the map mounted in this manner, if one wishes to use the portion of the map above the line A B (Fig. 1), fold the top part of the mounted map (Fig. 2) back along the line A B, turn the map over and he will have sections 1–5 and 11′–20′ together, in their proper relation. Likewise, if one wishes the portion of the map below the line C D, fold the bottom part of the mounted map back along the line C D, turn the map over and he will have sections 16–20 and 1′–10′ in their proper relation.

Maps mounted in this way have been found very convenient for use in the field. A sufficient area for average use can be seen at one time, and, as stated above, one has only about half the bulk in his mounted map that he would have if it were mounted on one side of the cloth only. Nothing needs to be said of the advantage of having one's map mounted, as every reader of this article who has ever carried an unmounted map in his pocket while in the field knows that the unmounted map's usefulness is short lived.

C. S. Floyd,

First Lieut. of Infantry.

Machine-gun Range-table for Flying Targets.

Modeled after the table of machine-gun fire given in the article "New Methods of Machine-Gun Fire," printed in the October-November issue of the Infantry Journal, the table on p. 591 has been calculated for the Benet-Mercier machine gun.

This table, which is typewritten, with the headings in black ink and the figures in red ink, is pasted on a sheet of flexible transparent celluloid. The sheet of celluloid is then attached to the reverse side of a sketching board where it is out of the way when the board is used for sketching.

The sketching board is also made for use as a slope board with string and lead plummet on the back of the board in a groove that has been chiseled out for the purpose. The sketching board and folding tripod is carried in a canvas case, packed as a top load on a pack mule. This makes it possible to have always a sketching outfit with the company as well as a table and angle reading instrument for aeroplane fire.

The procedure of using this table is as follows:

Upon sighting an aeroplane, the Range Finder (Bausch & Lomb, 80 cm.) immediately begins to get the range. At the same time, by sighting over the surface of the slope board, the angle to the aeroplane is easily obtained. This sighting may be made more accurate by setting a screweye of small diameter in the board near where the eye will

sight and, at the other end, a brad. The screw eye serves as a peep sight while the brad acts as a front sight.

After obtaining the range and the angle, the table immediately gives the correct sight setting (with due allowance for 300 yards searching fire); the proper amount to turn the handwheel for 300 yards searching fire, and the necessary distance to aim in advance of the aeroplane. This distance is given in mils and may be obtained by using any form of mil stick; by holding the eye above the elevating mechanism, which makes the rear-sight leaf subtend approximately 100 mils—half of the sight leaf is of course 50 mils; or by using the finger system and calling one finger 50 mils. The aiming point once found approximately, this distance is fixed in the mind as a point in the air or against a cloud at the measured distance in front of the aeroplane.

The table which has actually been constructed and carried on a pack mule in the machine-gun company, 4th Infantry, has never been tried out, nor are the calculations vouched for. It is asserted, however, that by use of this table the chance of bringing down an aeroplane is at least as good or better than by trusting entirely to luck and guess work.

G. P. Wilhelm,

1st Lieutenant, 4th Infantry.

RANGE-TABLE FOR MACHINE GUNS FOR USE AGAINST FLYING TARGETS.[1] 300 YARDS SEARCHING FIRE AND FIRE OF 5 GUNS SIMULTANEOUSLY IS NECESSARY.

Meas. dist. in yds. Bausch & Lomb range finders	Range for various angles to be announced					Turns of hand wheel down in order to get 300 yds. searching fire	Aim to be taken in mils in front of target
				DEGREES			
				(1)		(2	(3)
8	40	50	60	70	80		
800	1000	950	900	850	800	3/16	60
900	1100	1050	1000	950	850	1/4	60
1000	1200	1150	1050	1000	900	1/3	65
1100	1250	1200	1100	1050	900	3/8	65
1200	1300	1250	1150	1050	950	7/16	70
1300	1400	1350	1250	1100	1000	1/2	70
1400	1475	1400	1350	1175	1000	1/2	70
1500	1550	1500	1400	1250	1050	9/16	80
1600	1600	1550	1450	1300	1100	5/8	80
2000	1800	1700	1550	1400	1200	3/4	85

(1) Angles measured by bullet, string and slope board. Tables pasted on board.
(2) Benet-Mercier.
(3) Calculations based on 80 miles per hour.

[1] Above table is not appropriate for flying targets heading directly toward firing. In that case, distributed fire, 50 mils on each side of target must be used.

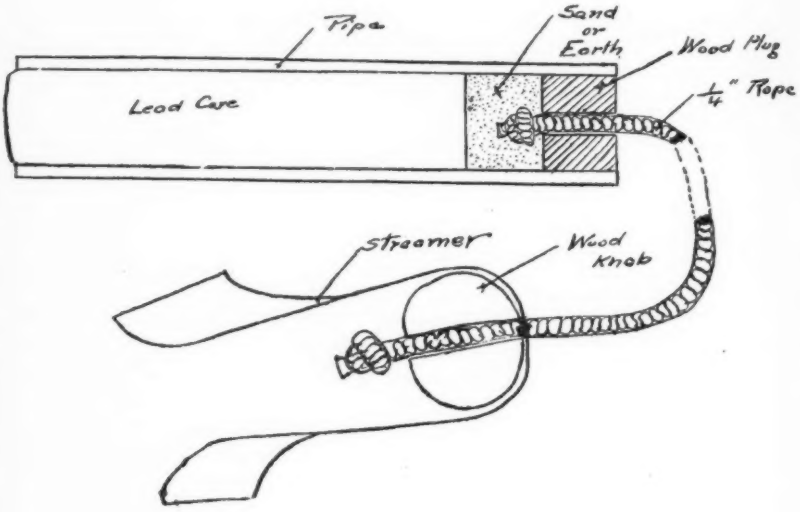
Improvised Dummy Handgrenade.

Dummy handgrenades not being ready for issue, the following materials

and methods will produce a home-made affair sufficiently like the real thing in shape and weight to afford throwing practice.

Cut water pipe of one inch diameter into five and one-half inch lengths. Put wood plug in one end of pipe and hammer down edges of pipe to grip plug firmly. Bore longitudinal hole in plug to take quarter-inch rope. Run rope through hole and knot end inside pipe. To add weight to this, set up grenade vertically so that wood plug is at bottom, and, after placing small quantity of sand or earth inside pipe to protect knot from burning, fill with melted lead. Vary weight by length of wood plug and amounts of sand and lead. This leaves us with the grenade body to which is attached a rope which should be sixteen inches in the clear.

We still require a knob and at least two streamers. For the knob, cut mop or broom handles of one and one-quarter inch diameter into one and one-quarter inch lengths. Rasp resulting section into sphere and bore hole to take quarter-inch rope. Run end of rope attached to body of grenade through hole and tie so as to have about twelve inches in the clear between the knob and the body of the grenade.



We still require streamers. Take off knob. Get piece of I. C. canvas or target cloth one and one-half inches wide and eighty-three inches long. Cut small hole in middle. Run rope through hole of streamer, re-attach knob and the dummy is completed. Finished product should weigh one pound.

W. R. WHEELER,
1st Lieut. 26th Infantry.

General Officers, July 1, 1917.

	Authorized commissioned strength July 1, 1917	Percentages	Equitable representation by arm of the service	Distribution January 30, 1917 (*b*)	Should be appointed July 1, 1917
Infantry	2244	47.00	13	9	4
Cavalry	988	20.70	6	5	1
Field Artillery	501	10.50	3	2	1
Coast Artillery	900	18.80	5	5	0
Engineers	142	3.00	1	1	0
Line Officers	0	0	6	6	0
Others (*a*)	....	.....	..	..	..
Total	4775	100.00	34	28	6

(*a*) Includes all special cases, viz., Generals Wood, Bliss, Barry, Edwards, Hodges and Sibert.
(*b*) Includes the Chief of Coast Artillery.

Editorial Department

Curtailing the Increments.

Without questioning the motives which prompted it, the proposed measure to limit promotions resulting from future increments under the National Defense Act by the rate at which the enlisted personnel is provided, is not, under the circumstances which confront us, a farsighted move.

It seems to be an accepted fact that we are in need of preparedness in one form or another. The National Defense Act was passed as a result of a conviction on the part of Congress to that effect. At the time of its passage, this act was admitted to be only a modest degree of preparedness—little more than a step in the right direction. No student of our military situation considered it as anything more than a beginning, the establishment of a nucleus which would have to be largely augmented before we could feel that we were in a fair way toward preparedness for defense.

One of the principle arguments in behalf of this measure was the necessity for providing for a trained force which could be utilized in emergency for training the large masses we would need.

Trained officers are the first essential in the building up of machinery for the training of such masses. Our experience, especially during the past year, demonstrates that we are wofully short of such material. During the past summer, when the National Guard was in the field on the Border, and when every effort was being made to bring it to a reasonable degree of proficiency in the shortest possible time, by straining our resources to a limit that practically crippled our regular troops, we were able to provide an average of one officer to each regiment of the National Guard. To one who is familiar with the many duties which an officer so detailed must perform, it is patent that such provision is little more than a drop in the bucket. Yet these same troops were in training for actual active service at any moment.

Again, some thousands of men had volunteered to attend the training camps to be established throughout the country. Something like ten thousand of them did attend the camp at Plattsburgh during the summer. At no time, except during the month of September, when the attendance had dwindled to about seven hundred, was it possible to provide more than one officer to companies which ranged in strength from one hundred and fifteen to one hundred and twenty-five or thirty men. Such were the straits to which we were reduced that some of the proposed camps had to be abandoned. In one case, a young officer, fresh from graduation at the Military Academy, reported at Plattsburgh with the idea of learning something for himself. Half an hour after reporting, he found himself in command of a company of one hundred and fifteen attendants, responsible for their organizing, equipping and training.

We are preparing for more of these training camps during the coming summer. There is every prospect that the attendance will be many times that of last year. The needs of the National

Guard will be only slightly reduced from that of last year. The Guard could, and would be glad to, make use of the services of double, even treble, the number of officers now on duty with it. The Regular Army is still far below its proper quota of officers. Throughout the country, the idea of universal military service is daily gaining ground. The machinery for putting any system of universal training into effect will, as a preliminary measure, call for thousands of trained officers, officers who will be able to undertake the work of organizing and building up such a system without hesitation or delay. In other words, everything in our military situation points to the necessity for increasing our officer personnel with maximum speed.

The curtailing of the increments under the Defense Act is of doubtful policy from whatever point of view we may consider it. The suggestion for such a move doubtless had its birth in connection with the system of promotion with which the Army is now burdened. Probably few, either in or out of the Army, would deny the desirability of increasing our officer personnel with all possible speed. Without studying the situation thoroughly, it is also probable that few of the uninitiated would be able to see any reason why a large number of officers should be promoted July 1st to fill vacancies in skeleton regiments with little prospect that they will be other than skeleton for some time to come. However, under our system of promotion, these officers must be promoted, and for no other reason than to make room at the bottom for the new personnel of which we are in such need.

Under the circumstances this is perhaps the very best reason that could be advanced. In its worst light, it merely demonstrates the evil of a system which should be changed at the earliest possible moment.

Returning to the necessity for new officers, the curtailing of the officer personnel presents another important situation. It has been known throughout the country, at colleges and military schools, in the Army and in civil life, that approximately one thousand vacancies would exist in the Army after July 1st, and hundreds of young men have been occupying their time during the past year in preparing themselves for examination in competition for these vacancies. To curtail the vacancies as proposed, means an indefinite delay to three-fourths of these young, and in all probability, desirable men. It means also an indefinite delay in beginning the work of training these young men against the emergency in which we would need them sadly.

It would be a fine thing if we could divorce the question of promotion from that of the future increments. Such a course would clear the atmosphere and let this measure of preparedness stand on its own merits. Unfortunately, as we have pointed out, it savors of promotion pure and simple, and invites a suspicion which clouds the real issue.

Announcements

Commendatory.

While not in the best of taste, we admit, we feel that we will by pardoned for publishing extracts from some of the letters which come as bright spots in an otherwise olive-drab career of routine.

I enclose with great pleasure a check to settle my past and present indebtedness. I consider the last two numbers of the JOURNAL worth more than all the past put together. . . .

I am already a subscriber to the JOURNAL and a member of the Association. I have several friends who constantly borrow my copy, so want to see if I can get a second copy of all numbers, beginning with the November-December number . . .

I have been a subscriber to the INFANTRY JOURNAL since I came back from Plattsburgh last summer, and before I received my commission as a Reserve officer. Perhaps compliments from us service babies may not count as much as those from the more sophisticated of the family, but I want to say, nevertheless, that I count the INFANTRY JOURNAL as fully as instructive and infinitely more interesting than any of the military textbooks I am wading through. I am overjoyed with "Night Operations" . . .

This letter is written in appreciation of the article "Night Operations," appearing for the first time in the last number of the JOURNAL.

Had this been prepared and available to the National Guard in its recent mobilization, it is believed the necessary paper-work would have been much better and more understandingly done . . .

It may be of interest to you to know that officers are borrowing my files of the INFANTRY JOURNAL for use as a basis of lectures for their enlisted men . . .

Otherwise.

Why don't you stick to the cover as originally started? Too much change means less improvement. Lacks dignity . . .

It is believed that a monthly issue will tend to contain filling-up material instead of the pick of good stuff that the JOURNAL has heretofore maintained.

Our Time of Issue.

One of our managerial ambitions has been to have the JOURNAL issued promptly on the first day of each month. Thus far, as our readers may have noticed, we have fallen short of our ambition by varying periods. Complications due to the change in management and in publication offices have been the chief causes of our delay in the past two issues. The delay in this issue is chiefly due to the erratic movements of the editorial force which has found itself under the necessity of doing business on railroad trains and in hotels throughout a greater part of the State of Maryland.

We have not as yet lost our ambition in this connection, but we make no promises.

Night Operations

A Department devoted to the interest of newly-commissioned Infantry officers, officers of the Infantry Officers' Reserve Corps and candidates for commission

Conducted by Capt. W. H. Waldron, 29th Infantry

Military Law

Q. What are the four classes of Military Jurisdiction?

A. 1. Military Government (the law of hostile occupation).
2. Martial Law at home (a domestic fact).
3. Martial Law applied to the Army.
4. Military Law.

Q. What is Military Government, or the law of hostile occupation?

A. Military power exercised by a belligerent by virtue of his occupation of an enemy's territory. This belongs to the Law of War and, therefore, to the Law of Nations. When a conquered territory is ceded to the conqueror, military government continues until civil government is established by the new sovereign.

Q. What is Martial Law at home?

A. Military power exercised in time of war, insurrection or rebellion, in parts of the country retaining their allegiance, and over persons and things not ordinarily subjected to it.

Q. What is the Martial Law Applied to the Army?

A. The military power extending in time of war, insurrection or rebellion, over persons in the military service, as to obligations arising out of such emergency and not falling within the domain of military law, or otherwise regulated by law.

Q. What is Military Law?

A. The legal system that regulates the government of the military establishment. It is a branch of the municipal law, and in the United States derives its existence from special constitutional grants of power.

Q. What is the source of military jurisdiction in the United States?

A. The Constitution.

Q. From what sources is Military Law derived?

A. It is derived from both written and unwritten sources.

Q. What are the written sources of Military Law?

A. The Articles of War, enacted by Congress, August 29, 1916.
2. Statutory enactments relating to the military service.
3. The Army Regulations.
4. The General and Special Orders, and decisions promulgated by the War Department and by department, post and other commanders.

Q. What is the source of the unwritten military law?

A. The custom of war, consisting of the customs of the service both in peace and war.

Q. What are the three kinds of Military Tribunals?

A. 1. Military Commissions and Provost Courts, for the trial of offenders against the laws of war and under Martial Law.
2. Courts-Martial—General, Special and Summary—for the trial of offenders against military law.
3. Courts of Inquiry, for the examination of transactions of, or accusations or imputations against, officers and soldiers.

Q. What persons are subject to Military Law?

A. 1. All officers and soldiers belonging to the regular army of the Uited States; all volunteers, from the dates of their muster or acceptance into the military service of the United States; and all other persons lawfully called, drafted, or ordered into, or to duty, or for training in the said service, from the dates they are required by the terms

of the call, draft, or order to obey the same.
2. Cadets.
3. Officers and soldiers of the Marine Corps, when detached for service with the armies of the United States, by order of the President.
4. Officers and men of the Medical Department of the Navy, serving with a body of Marines detached for service with the Army, in the same manner as officers and men of the Marine Corps who may be so serving.
5. All retainers to the camp and all persons accompanying or serving with the armies of the United States, outside of the territorial jurisdiction of the United States; and, in time of war, all such retainers and persons accompanying or serving with the armies of the United States in the field, both within and without the territorial jurisdiction of the United States, though not otherwise subject to the Articles of War.
6. All persons under sentence adjudged by courts-martial.
7. Army field clerks.
8. Field Clerks, Quartermaster Corps.

Q. What are the several kinds of courts-martial in the United States service?

A. 1. The General court-martial.
2. The Special court-martial.
3. The Summary court-martial.

Q. Who may be detailed as members of a court-martial?

A. All officers in the military service of the United States and officers of the Marine Corps when detached for service with the Army by order of the President.

Q. What are the exceptions?

A. 1. No officer may sit as a member of a general or special court-martial when he is the accuser or a witness for the prosecution.
2. Chaplains, veterinarians, dental surgeons, and second lieutenants in the Quartermaster Corps are not in practice detailed as members of courts-martial.

Q. What is the composition of a general court-martial?

A. It may consist of any number of officers from 5 to 13, inclusive.

Q. What is the minimum number that may continue to transact business?

A. Five. While a number less than five cannot be organized as a general court-martial or proceed with a trial, they may perform such acts as are preliminary to the organization and action of the court.

Q. What action is taken when the court is reduced below five?

A. It will direct the judge advocate to report the facts to the convening authority, and await his orders.

Q. What is the composition of a special court-martial?

A. It consists of any number of officers from three to five, inclusive. When the members are reduced below three, a report of the fact will be made by the judge advocate to the convening authority, who will detail enough officers to enable the court to proceed.

Q. What is the composition of a summary court-martial?

A. It consists of one officer.

Q. Under what conditions may retired officers of the Army be detailed as members of courts-martial?

A. 1. When, in time of peace, they are assigned to active duty with their own consent.
2. When, in time of war, they are employed on active duty in the discretion of the President.
3. At other times they are not available for court-martial duty.

Q. Under what conditions are members of the Officers' Reserve Corps available for court-martial duty?

A. When they are ordered to active service by the Secretary of War.

Q. Under what circumstance may officers of the Regular Army and officers of the Marine Corps serve on courts-martial together?

A. When troops of the Marine Corps are detached, by order of the President, for service with the Army.

Q. Is there any distinction between officers of the regular service and other officers with reference to their eligibility for duty as members of a court-martial?

A. No distinction now exists for the trial of any person subject to military law in the matter of eligibility for court-martial duty among the various classes

of officers in the military service of the United States.

Q. May an officer be tried by officers junior to him in rank?

A. In no case, when it can be avoided, shall an officer be tried by officers junior to him in rank. This provision is not mandatory upon the convening authority. Its effect is to leave to that officer—as the final authority to judge—the determination of rank of the members, with only the general instruction that seniors in rank to the accused shall be selected, as far as the exigencies and interests of the service will permit.

Q. What officers are empowered to appoint general courts-martial?

A. 1. The President of the United States.
2. The commanding officer of a territorial division.
3. The commanding officer of a territorial department.
4. The Superintendent of the Military Academy.
5. The commanding officer of an army.
6. The commanding officer of an army corps.
7. The commanding officer of a tactical division.
8. The commanding officer of a separate brigade.
9. The commanding officer of any district or any force or body of troops, when empowered by the President to do so.

Q. When the person having the authority to appoint a court-martial is the accuser, what action is taken?

A. The court is appointed by a higher competent authority.

Q. May officers be tried before courts-martial appointed by the Superintendent of the Military Academy?

A. They may not.

Q. Under what authority may the President institute a general court-martial?

A. 1. As commander-in-chief of the Army.
2. When the accuser is the superior officer of the army, and the law requires the next higher commander to appoint the court.
3. In the particular cases provided in 1230 of the Revised Statutes.

NOTE.—When an officer, dismissed by order of the President, makes a written application for trial, setting forth under oath that he has been wrongfully dismissed, the President shall, as soon as the necessities of the service may permit, convene a court-martial to try such officer on the charges on which he shall have been dismissed. And, if a court-martial is not so convened within six months from the presentation of such application for trial, or if such court, being convened, does not award dismissal or death as the punishment of such officer, the order of dismissal by the President shall be void. (R. S. 1230.)

Q. What authority has the appointing officer over a court-martial?

A. He may control its existence, dissolve it and determine the cases to be referred to it for trial, but he can not control the court in the exercise of powers vested in it by law.

Q. What authorities may appoint a special court-martial?

A. 1. The commanding officer of a district.
2. The commanding officer of a garrison.
3. The commanding officer of a fort.
4. The commanding officer of a camp.
5. The commanding officer of any place where troops are on duty.
6. The commanding officer of a brigade.
7. The commanding officer of a regiment.
8. The commanding officer of a detached battalion.
9. The commanding officer of any detached command.

Q. May a commanding officer appoint himself as a member of a special court-martial?

A. He may not.

Q. What authorities may appoint a summary court?

A. Any commanding officer.

Q. When there is only one officer on duty with a command what action is taken with reference to the appointment of a summary court officer?

A. When but one officer is present with a command, he is the summary court officer of that command and shall hear and determine cases brought before him. In such case no order appointing the court will be issued, but the officer will enter on the record that he is "the only officer present with the command."

Q. Who has power to appoint the judge advocate of a court-martial?

A. The officer empowered to appoint the court.

Q. From what ultimate source does the court-martial derive its existence?

A. From Congress.

Q. To what class of cases is the jurisdiction of the court-martial limited.

A. Its jurisdiction is limited to criminal cases.

Q. Are the decisions of courts-martial subject to review?

A. They are not subject to review by any courts whatsoever. The United States Courts may, on writ of habeas corpus, inquire into the legality of the detention of a person held by military authority. Such inquiry may be made at any time, either before or during trial, or while sentence is being served, and the court will order such person discharged if it appears to the satisfaction of the court that any of the statutory requirements conferring jurisdiction have not been fulfilled.

Q. What action is necessary to legalize the action of a court-martial?

A. The approval, or confirmation, of the proper commanding officer. With such approval or confirmation, sentences of courts-martial become operative, are as effective as the sentences of civil courts having criminal jurisdiction, and are entitled to the same legal consideration.

Q. What conditions must obtain as to the legal jurisdiction of a court-martial and the validity of its judgments?

A. It must be shown:

1. That it was convened by an officer empowered by statute to convene it.
2. That the persons who sat on the court were legally competent to do so.
3. That the court thus constituted was invested by the acts of Congress with the power to try the person and the offense charged.
4. That its sentence was in accordance with the law.

Q. What is the rule of procedure when courts-martial and civil courts have concurrent jurisdiction?

A. In accordance with the principle of comity, as between the military and civil tribunals, in cases of concurrent jurisdiction the court which first attaches in a particular case is entitled to proceed to its termination.

Q. What is the procedure when a court-martial has duly assumed jurisdiction over an offence and over the person committing it, and is divested of that jurisdiction by a wrongful act of the accused?

A. A court-martial having once assumed jurisdiction of a case, can not be divested, by any wrongful act of the accused, of its authority or be discharged from its duty to proceed to fully try and determine according to law and its oath. Thus, the fact that the accused, after arraignment and during the trial, has escaped from military custody furnishes no ground for not proceeding to a finding and, in the event of conviction, to a sentence in the case; the court may and should find and sentence as in any other case.

Q. What are the exceptions to the rule that military jurisdiction terminates when a person is legally separated from the service?

A. 1. Persons guilty of fraud against the United States.
2. Under Section 1230 Revised Statutes (see ante.).
3. Persons serving sentence of a court-martial.
4. Where a discharge is secured by fraud.
5. Desertion in previous enlistment.

NOTE.—For an offence committed prior to the expiration of his term of enlistment, a soldier may be held in the service and tried after the expiration of his term. So, also, a soldier may be tried for offences committed while making up time lost by desertion; through absence without leave; through disease or injury, the result of his own misconduct.

Q. Over what persons and offences do general courts-martial have jurisdiction?

A. 1. Any person subject to military law; for any crime or offence made punishable by the Articles of War.
2. Any person other than (1) above, who by the law of war is subject to trial by military tribunals; for any crime or offence in violation of the law of war.

Q. What limits are placed on the punishing power of a general court-martial?

A. Punishment is discretionary with a general court-martial except:
(*a*) When mandatory under the law.
(*b*) When limited by order of the President, under the 45th Article of War.
(*c*) That the death penalty can be imposed, only when specifically authorized.

Q. Name some of the mandatory sentences?

A. 1. The death sentence is mandatory in the case of spies.
2. Dismissal is mandatory for conduct unbecoming an officer and a gentleman.
3. Either death or imprisonment is mandatory for murder or rape.

Q. Over what persons and offences do special courts-martial have jurisdiction?

A. 1. Any person subject to military law, except:
(*a*) An officer.
(*b*) Any person subject to military law and belonging to a class or classes excepted by the President.
2. Any crime or offence—not capital—made punishable by the Articles of War.

NOTE.—Under (*b*), cadets and soldiers holding certificates of eligibility for promotion are excepted from the jurisdiction of special courts-martial.

Q. What are the capital crimes under the Articles of War?

A. 1. Peace offences:
(*a*) Assaulting or disobeying a superior officer.
(*b*) Mutiny or sedition.
(*c*) Failure to suppress mutiny or sedition.
2. War offences:
(*a*) Desertion.
(*b*) Advising or aiding another to desert.
(*c*) Misbehavior before the enemy.
(*d*) Subordinates compelling a commander to surrender.
(*e*) Improper use of countersign.
(*f*) Forcing a safeguard.
(*g*) Relieving, corresponding with, or aiding the enemy.
(*h*) Spies.
(*i*) Misbehavior of sentinel.

Q. What is the limit of the punishing power of a special court-martial?

A. 1. Confinement for six months.
2. Forfeiture of pay for six months.

NOTE.—They can not adjudge dishonorable discharge. Reduction of noncommissioned officers to the ranks and reduction of privates in grade may be adjudged in addition to the above.

Q. Over what persons and offences do summary courts-martial have jurisdiction?

A. 1. Any person subject to military law, except:
(*a*) An officer.
(*b*) A cadet.
(*c*) A soldier holding a certificate of eligibility for promotion.
(*d*) A noncommissioned officer who objects to trial. (Except when ordered by an officer competent to bring him to trial before a general court-martial.)
(*e*) Any person belonging to a class or classes of persons excepted by the President from the jurisdiction of the summary court-martial.
2. For any crime or offence—not capital—made punishable by the Articles of War.

Q. What are the limits of punishment of a summary court-martial?

A. 1. Confinement for three months.
2. Forfeiture of three months' pay.

NOTE.—Reduction to the ranks in the case of noncommissioned officers, etc. See note, second question above.

Q. What restrictive action is taken against an officer charged with an offence?

A. An officer charged with crime or a serious offence against the Articles of War shall be placed in arrest by the commanding officer, and, in exceptional cases, an officer so charged may, by the same authority, be placed in confinement.

Q. What restrictive action is taken against a soldier charged with an offence?

A. 1. A soldier charged with crime or a serious offence against the Articles of War shall be placed in confinement; when charged with a minor offence, he may be placed in arrest.

NOTE.—In practice, the general rule observed is: if a soldier is to be tried by a general court-martial, he will be placed in con-

finement; if he is to be tried by an inferior court, he is placed in arrest.

Q. Does the fact that a person charged with an offence has not been placed in arrest or confinement affect the jurisdiction of the court?

A. It does not.

Q. In whom is vested the power of placing officers in arrest?

A. Only commanding officers, except as provided for in the 68th Article of War:

> All officers and noncommissioned officers have power to part and quell all quarrels, frays and disorders among persons subject to military law and to order officers who take part in the same into arrest, and other persons subject to military law who take part in the same into arrest or confinement, as circumstances may require, until their proper superior officer is acquainted therewith . . .

Q. How is the arrest of an officer effected?

A. He may be placed in arrest by his commanding officer in person or through another officer; by a verbal or written order or communication, advising him that he is placed in arrest, will consider himself in arrest, or words to that effect.

Q. What is the official and social status of an officer in arrest?

A. 1. He cannot exercise command of any kind.
2. He will not wear his sword.
3. He will not visit officially his commanding officer or other superior officer unless directed to do so.
4. His applications and requests of every nature will be made in writing.

Q. What is the rule in regard to placing medical officers in arrest?

A. In ordinary cases, where inconvenience to the service would result, a medical officer will not be placed in arrest until the court-martial convenes for his trial.

Q. What action is necessary in placing a soldier in confinement?

A. Except as provided in the A. W. 68 (ante), or when restraint is necessary, no soldier will be confined without the order of an officer, who shall previously inquire into his offence. It proper, however, for a company commander to delegate to the noncommissioned officers of his company the power to place enlisted men in arrest when restraint is necessary, but such action must be reported at once to the company commander.

Q. What is the status of noncommissioned officers in arrest?

A. They will not be called upon to perform any duty in which they may be called upon to exercise authority or control over others. When placed in confinement, they will not be sent out to work.

Q. Who may arrest deserters from the military service?

A. Any civil officer having authority under the laws of the United States or of any State, Territory, district or possession of the United States.

Any citizen, under an order or by direction of a military officer.

Q. What is a military charge?

A. A military charge corresponds to a civil indictment. It consists of two parts—the technical charge and the specification. The former alleges the offence in general terms, and the latter sets forth the facts constituting the same.

Q. What requirement must a charge fulfil?

A. It must be laid under the proper Article of War or other statute.

Q. What requirements must the specification fulfil?

A. It must set forth in simple and concise language facts sufficient to constitute the particular offence; and in such manner as to enable a person of common understanding to know what is intended.

Q. Who may prefer charges?

A. Any officer. This includes officers of the Army on the retired list and those of the Officers' Reserve Corps in active service. An officer is not disqualified by reason of the fact that he himself is under charges or in arrest.

Q. What is the rule regarding the numbering of charges and specifications?

A. Where there are several specifications under one Article of War the usual manner is to place them all under one charge, rather than to make several charges with one specification under

each. Where there are several specifications under one charge they will be consecutively numbered, and where there are several charges, the same will be consecutively numbered.

Q. To what statements should a charge be limited?

A. To a designation of the Article of War violated.

Q. What elements should a specificatioin contain?

A. 1. The name, rank, title, and organization of the accused person, if he belongs to the Army of the United States, should be stated. If the accused is a civilian, he should be so described as to establish the fact that he is subject to trial by military tribunals.

2. The facts constituting the offence charged will be set forth briefly but clearly, together with the place and time of commission. Care should be taken that all the elements of the offence as described in the Article of War, or the other statute, are set forth. The specification must be appropriate to the charge.

Q. What is the routine procedure in preparing and forwarding charges against an enlisted man?

A. All charges, for trial by court-martial, will be prepared in triplicate. The prescribed charge-sheet will be used as a first sheet, ordinary paper being used for such additional sheets as may be necessary.

They will be accompanied:

(*a*) Except when the trial is to be had by summary court, by a brief statement of the testimony expected from each material witness, both for the prosecution and for the defence, together with all available and necessary information as to any other actual or probable testimony or evidence in the case; and

(*b*) In the case of a soldier, by properly authenticated evidence of convictions, if any, during the preceding year of his current enlistment.

The charges are forwarded by the officer preferring them to the officer exercising summary court-martial jurisdiction over the command to which the accused belongs who will refer them to a court-martial in his jurisdiction for trial, or forward them to the next superior authority exercising court-martial jurisdiction over the command to which the accused belongs or pertains.

(*c*) When trial is to be had by summary court, the completed charges become the record of trial. A copy will be completed and sent to the company or other commander. A second copy will be completed and forwarded to the officer exercising general court-martial jurisdiction over the command.

(*d*) When trial is had by special or general court-martial, two copies of the charges will be referred to the trial judge-advocate, one copy to be furnished by him to the accused. The third copy will be used for purposes of record in the office of the officer appointing the court.

Q. What investigation is made before charges for trial by general court-martial are forwarded?

A. The officer exercising summary court-martial jurisdiction over the command to which the accused pertains either carefully investigates the case himself or causes an officer other than the officer preferring the charges to investigate them carefully and report to him the result of such investigation. The officer investigating the charges will afford to the accused an opportunity to make any statement, offer any evidence, or present any matter in extenuation that he may desire to have considered in connection with the accusation against him.

Q. What elements must be included in the endorsement by which charges are forwarded to superior authority?

A. 1. The name of the officer who investigated the charges.

2. The opinion of such officer as to

whether the several charges can be sustained.

3. The substance of the statement, if any, that the accused may voluntarily make in connection with the case.
4. A summary of the extenuating circumstances, if any, connected with the case.
5. His recommendation as to the action to be taken.

Q. What period is allowed the accused to prepare for his defence?

A. Five days.

Q. What is the procedure of a General Court-Martial?

A. The following is the order of institution and procedure of a General Court-Martial:

1. The order instituting the court is issued from the headquarters of the officer competent to appoint a general court-martial. The body of this order designates the date, hour, and place where the court is to meet; details the members of the court by rank, name, and organization in the order of their relative rank; details the judge advocate of the court by his rank, name and organization; and authorizes the appointment of a stenographic reporter and the necessary travel.

2. The members of the court assemble at the place and hour designated in the order for the first session of the court. Thereafter, they meet in accordance with the adjournment, which is usually "to meet at the call of the president." When the court is detailed to try a number of cases this procedure is usually modified by having the first meeting on notice by the president, through the judge advocate, that there is business to be transacted.

The members of the court wear the uniform prescribed by the president (usually dress), and sabers. The judge advocate, the accused and his counsel wear the same uniform as the court, without side arms. Military witnesses wear the uniform of the court, with side arms. When an enlisted man is tried for desertion, he appears before the court in the dress that he wore at the time of his apprehension or surrender.

3. When the court is ready to proceed, the members take seats at a table provided for the purpose. The president sits at the head of the table. The other members at his right and left, alternately, according to relative rank. The judge advocate sits at the foot of the table or at a separate table. The accused and his counsel sit at a table conveniently placed. A witness, when testifying, is seated near the judge advocate, and the reporter is placed near the witness' chair. The interpreter is located at a convenient place (see figure).

4. After the members of the court are seated, the judge advocate calls the roll, using the order instituting the court, after which he announces the result to the president as: *Sir, all are present,* or *so and so is absent,* stating the cause or authority for the absence if it is known. The president directs the judge advocate: *"Proceed with the business of the court."*

5. The judge advocate then causes the accused, his counsel, the reporter, and interpreter to enter the court room and, while he and they remain standing, announces: *The judge advocate is prepared to proceed with the case of the United States versus Private John Doe, Company "K," 48th Infantry.*

The president announces: *If there is no objection, the court will proceed to the trial of Private Doe.*

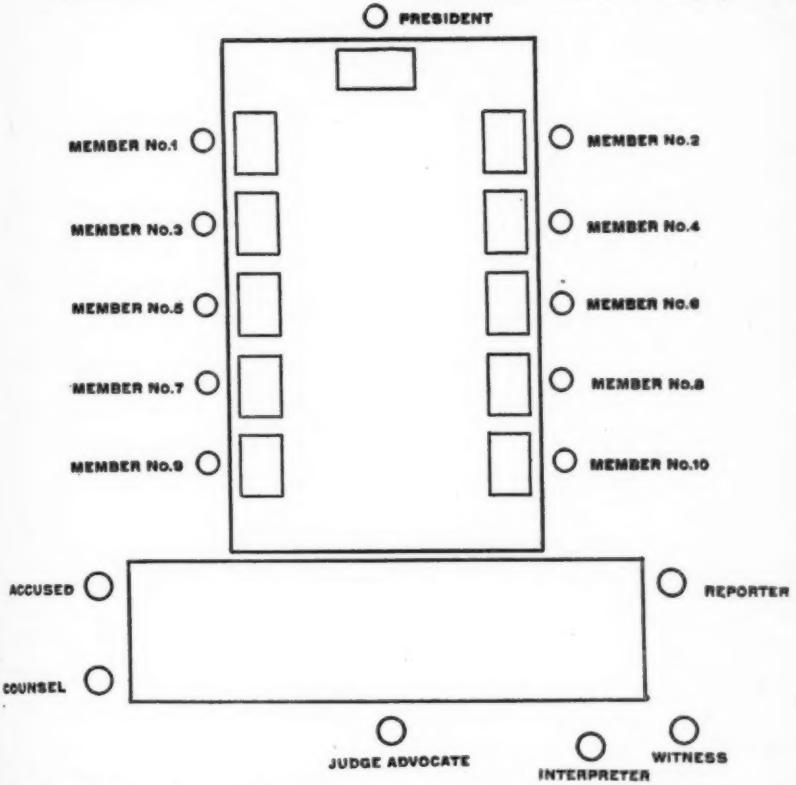
The judge advocate announces: *The accused desires to introduce First Lieutenant William Williams, 48th Infantry, as his counsel,* or, in case the accused does not desire counsel, the judge advocate states: *The accused states that he does not desire counsel.*

6. The reporter of the court is then sworn by the judge advocate, administering the following oath, both standing: *You swear (or affirm) that you will faithfully perform the duties of reporter to this court. So help you God.*

6a. The judge advocate asks the accused if he desires a copy of the record of his trial, and gives the reporter the necessary instructions.

7. The judge advocate and the accused stand up. The judge advocate reads aloud to the accused the order convening the court, and together with

any other orders modifying the detail, and states to the accused: *Of the officers named in this order (or these orders), the following are present* (names the officers of the court present). *Have you any objection to being tried by any officer present?* This is known in military law as "the right of challenge."



NOTE.—Members of a general or special court-martial may be challenged by the accused or by the judge advocate, but only for cause stated to the court. The court determines the relevancy and validity thereof, and does not receive a challenge to more than one member at a time. (18th Article of War.)

Should the accused object to being tried by any member of the court present, the counsel would state in behalf of the accused: *The accused objects to Captain Jones, on the ground that (stating the grounds upon which the objection is based).* The challenged member is then given an opportunity to make a statement in reply to the challenge.

NOTE.—A positive declaration by the challenged member that he is not prejudiced against the accused, nor interested in the case, is ordinarily satisfactory to the accused.

If the statement is not satisfactory to the accused, he may at this time state: *I am not satisfied with the statement of Captain Jones and request that he be put upon his voir dire.* The judge advocate and the challenged member standing, the judge advocate administers the following oath to him: *You swear that you will true answers make*

to questions touching upon your competency as a member of the court in this case. So help you God. The member is then examined by the accused (generally through his counsel), in the same manner that a juror is examined in criminal courts. Upon the completion of this examination the president announces: *The court will be closed.*

8. The challenged member, the accused and his counsel, and spectators, if any; the judge advocate, the reporter, the interpreter, withdraw from the court room and the court is said to be "closed." The remaining members of the court deliberate upon the question as to whether or not the challenged member shall sit as a member of the court in the case. They arrive at a decision by vote, beginning with the junior member, the majority carrying the decision.

NOTE.—Courts are liberal in passing upon challenges and, when there is any valid reason given, sustain them.

Having arrived at a decision, the president announces that the court is opened and the judge advocate is so notified. This is generally done by ringing a bell.

9. Those who withdrew now enter the court room and take their places and the president announces the decision of the court as: *The objection to Captain Jones is sustained, and he will be excused as a member of the court in this case,* or *The objection to Captain Jones is not sustained and he will sit as a member of the court in this case.*

If the challenged member be excused, he will immediately withdraw. All members of the court junior to him in rank will change their seats so as to preserve the prescribed arrangement of the court according to rank.

The judge advocate then interrogates the accused: *Have you any objection to any other member of the court, present?* Should the accused have objection, he will challenge the member objected to and the same procedure as above will be observed. If he does not object to any other member he will state: *There is no further objection.* The judge advocate may now in like manner challenge any member of the court.

Should any member of the court believe himself to be the accuser in the case, he will at this point formally announce that fact to the court, whereupon he will be excused. When the judge advocate, the accused, his counsel, or any member of the court has reason to believe that any member thereof may be called as a witness for the prosecution, such belief shall be communicated to the court and, if the judge advocate states that the member is to be called, he will be excused. When there are no further challenges to be considered by the court, the president announces: *The court will be sworn.*

10. All the members of the court, the judge advocate and all other persons in the court room stand, and the following oath is administered by the judge advocate—who holds right hand uplifted—to the members of the court: *You* (naming each member of the court present) *do swear* (*or affirm*) *that you will well and truly try and determine, according to the evidence, the matter now before you, between the United States of America and the person to be tried, and that you will duly administer justice, without partiality, favor or affection, according to the provisions of the rules and articles for the government of the Armies of the United States, and if any doubt should arise not explained by said articles, then according to your conscience, the best of your understanding, and the custom of war in like cases, and you do further swear* (*or affirm*) *that you will not divulge the findings or sentence of the court until they shall be punished by the proper authority, except to the judge advocate and assistant judge advocate; neither will you disclose or discover the vote or opinion of any particular member of the court-martial, unless required to give evidence thereof as a witness by a court of justice in due course of law. So help you God.*

As the name of each member of the court is called he raises his right hand and retains it in that position until the reading of the oath is completed and acknowledged.

While all remain standing, the presi-

dent of the court administers the following oath to the judge advocate: *You* (naming the judge advocate) *do swear (or affirm) that you will not divulge the findings or sentence of the court to any but the proper authority until they shall be duly disclosed by the same. So help you God.*

Upon completion of the swearing of the court and the judge advocate, the court is said to be organized.

11. At this point, if there is an interpreter, he is sworn by the judge advocate—both standing—with the following oath: *You swear (or affirm) that you will truly interpret in the case now in hearing. So help you God.*

12. If a delay in the case is necessary, either on the part of the prosecution or the defence, it should be made at this time.

13. The judge advocate then reads the charges and specifications preferred against the accused and the accused is called upon to plead to them. In case of several charges and specifications, the order pursued is to arraign on the first, second, etc., specifications to the first charge, then on the first charge, and so on with the rest. During the reading of the charges the judge advocate and the accused stand. The judge advocate puts the question to the accused after the reading of each specification and charge: *How plead you?* All of this constitutes the arraignment.

14. The accused is called upon to plead to each charge and specification. Ordinarily the plea of the accused is *guilty* or *not guilty* to each charge and specification; or, *guilty of a specifications excepting certain words, and of the excepted words not guilty;* or when charged with an offence which includes a lesser one of kindred degree, *guilty of the specification except certain words, substituting certain other words,* and to the charge *not guilty, but guilty of the lesser kindred offense.*

For example: in a trial for desertion, the accused, by substituting words in the specification that covers the offence of absence without leave, may plead guilty to them, but not guilty to the part of the specification that covers desertion. In the charge, he may substitute: *as not guilty of desertion but guilty of absence without leave.*

The pleas are generally entered by the counsel on behalf of the accused. If the accused questions the jurisdiction of the court he may here enter a plea to the jurisdiction, or, if any other plea is appropriate, it must be entered at this time. For example: a plea in abatement, or a plea in bar of trial.

15. Should the accused plead guilty, the president of the court will halt the proceedings and explain to the accused the meaning of such a plea, ask him if he understands the same, and question him to such extent that there can be no misunderstanding of the action he has taken in pleading guilty. He will explain to the accused the penalty that the court may impose for such an offence and make certain that the accused fully understands it.

16. The prosecution, conducted by the judge advocate, then begins the presentation of the case. The judge advocate announces: *The judge advocate desires to introduce* (naming the witness) *as a witness for the prosecution.* The witness enters. The judge advocate directs him to hold up his right hand. (If he is wearing gloves, the judge advocate directs him to remove the right-hand glove). The following oath is administered by the judge advocate, both he and the witness standing: *You swear or affirm that the evidence that you shall give in the case now in hearing shall be the truth, the whole truth, and nothing but the truth. So help you God.*

The judge advocate directs the witness to be seated in the witness chair and cautions him to speak slowly and distinctly to the court in order that all may hear what he has to say. The judge advocate then proceeds to the direct examination of the witness, in the case of a military witness, by asking: *State your name, rank, organization and station,* or in the case of a civilian witness, *State your name and residence.* Then follows the identification of the accused: *Do you know the accused? If so, state who he is.*

Then follow any other questions that the judge advocate desires to ask

the witness in the prosecution of the case.

17. At the conclusion of the direct examination, the judge advocate announces that fact and the witness is turned over to the defence for the cross-examination by the counsel for the accused. The judge advocate is then given an opportunity to re-examine the witness and the defense to re-cross-examine the witness. At the conclusion of all this the president inquires: *Questions by the members of the court?* and the members of the court are then permitted to ask any questions they desire. Upon the completion of this, the witness is excused.

18. Should a question be asked of a witness, either by the prosecution or by the defence, to which objections is made by the opposite party in the case, the party objecting will announce, before the witness has had an opportunity to answer: *I object to that question,* after which he states the grounds upon which the objection is based. The opposite party is then given an opportunity to reply to the objection and, after all conversation on the matter has been concluded, the president announces: *The court will be closed.* All persons in the court room, other than the members of the court, will withdraw. The court deliberates the question and a vote is taken on the subject, starting with the junior member of the court. The majority rules. If there is a tie vote, the proposition is lost. The president announces: *The court is opened.* Those who withdrew are recalled, as indicated in paragraph 8. The president announces: *The objection is sustained, and the question will not be answered,* or, *The objection is not sustained, and the witness will proceed to answer the question.* In the latter case the question is again asked and the witness required to answer.

19. After all the witnesses for the prosecution have been examined the judge advocate will introduce any documentary evidence he may have to place before the court for its consideration. Documentary evidence may be introduced at any time, though the rule is that it will be introduced at the conclusion of the examination of the witnesses for one side or the other.

After the judge advocate has concluded his side of the case for the government he announces: *The prosecution here rests.* The witnesses for the defence are then called as indicated by the counsel for the accused and their examination proceeds as for those of the prosecution. The counsel for the accused conducts the direct examination and the judge advocate the cross-examination. The defence then submits any documentary evidence that it desires considered and, when there is nothing further, the counsel announces: *The accused desires to be sworn as a witness in his own behalf,* or, *The accused desires to make a verbal statement in his own behalf,* or, *The accused desires to submit a written statement in his own behalf.* In the first case, where the accused is sworn as a witness in his own behalf, he is examined by the counsel for the defence and is subject to cross-examination by the judge advocate and to questions by members of the court. In the second case the accused merely makes a verbal statement to the court, which is unsworn, and may be taken for what it is worth; in the third case the accused submits a written statement to the court which is read by the judge advocate and appended to the record of the court as a part of the record in the case.

20. Following this, the counsel for the defence is given an opportunity to make a summing up of the case and an argument for the accused. This is followed by the action of the judge advocate who may make answer to the argument of the defence. In case the judge advocate has nothing further, he announces: *The judge advocate submits the case without remark.* In any event, the judge advocate, on behalf of the government, has the last word in the case. The president announces: *The court will be closed.*

21. All persons in the court room withdraw except the members of the court, who proceed to a finding in the

case. After deliberating over the case to such extent as may be necessary and discussing it to the extent desired by the members, the president announces: *In the absence of objection, we will proceed to vote on a finding in this case.*

The president reads, or causes to be read, the first specification and then calls upon each member, starting with the junior, to register his vote on the finding. The remaining specifications to a charge are taken up in their order and each voted on in like manner. Then, the charge is voted on. The members register their votes: *guilty* or, *not guilty*, or, *sustain the plea*, or, *guilty as plead.* The president of the court records the votes and announces the result at the end of each voting period. The majority rules. In case of a tie in the vote upon a certain specification the finding is "not guilty," in other words, the accused is given the benefit.

22. After arriving at a finding on all the specifications and charges, and having verified same, the president announces: *The court will be opened.* The judge advocate is notified and the parties that withdrew return to the court room as in paragraph 8. The president inquires: *Is there anything further to submit in this case?*

If there is nothing further, the judge advocate so announces. If there is evidence of previous convictions that have been referred to the court by proper authority, the judge advocate announces: *The judge advocate has the following evidence of previous convictions to present for the consideration of the court.* The judge advocate reads the evidence of previous convictions and, after completing each case, the accused is permitted to verify the same and add such remarks as may be appropriate. The president announces: *The court will be closed.* All except the members of the court again withdraw, and the court proceeds to a sentence in the case.

23. In arriving at a sentence, after a finding of guilty, the court proceeds as follows:

(*a*) One member of the court is detailed to verify the maximum limit of punishment that may be awarded in the case. This precaution is taken to avoid a sentence greater than the maximum authorized.

(*b*) The president of the court calls upon members to submit sentences. Those who so desire, write out a sentence on a piece of paper and pass it to the president. When one or more have been received, the president arranges them in the order of their severity and inquires: *Are any other sentences proposed?* If there be none, the president selects the least severe sentence that has been proposed, reads it, and calls for a vote on it.

(*c*) The members vote "yes," indicating that they concur in the sentence or "no," indicating that they do not concur in it. The voting starts with the junior member of the court, and proceeds as indicated previously when voting on the finding. The president records the vote and announces the result. The majority rules. If there is a tie vote the sentence is lost. In this case the court proceeds to vote in like manner upon the next least severe sentence proposed. Should this also be lost, voting is continued on sentences until one is carried. This is the sentence of the court.

24. The judge advocate is recalled and the president gives him the findings and sentence, which he preserves for record in the case. The court then proceeds to the consideration of other business or adjourns to meet at the call of the president; or adjourns to meet at a certain time; or takes a recess for such a time.

25. In the preparation of the record of a case the reporter writes up all the proceedings, entering everything that transpires during the trial, including all the evidence, objections, rulings of the court, etc. The judge advocate is

required to enter the findings and the sentence in the record in his own handwriting or on a typewriter, in which latter case he is required to certify that he personally recorded the findings and sentence. The record of the trial is signed by the president of the court and the judge advocate, sealed, and mailed to the convening authority for final action.

Q. In comparison with the proceedings of a civil court, what are the duties of the members and of the judge advocate of a court-martial?

A. The members of the court act in the capacity of both judge and jury.

2. The judge advocate is the prosecuting attorney, or state's attorney.

Q. What action is taken by a member of the court when he is unable to attend a session?

A. He will communicate the cause to the judge advocate, and the same will be entered on the record of the proceedings.

Q. Who is the president of a general court-martial?

A. The president of the court is not announced. The senior officer present acts as president.

Q. What are the duties of the president of a general court-martial?

A. 1. He has the ordinary duties and privileges of the member of a court.

2. He is the organ of the court to maintain order and conduct its business.

3. He speaks and acts for the court in every instance where a rule of action has been prescribed by law, regulations or its own resolution.

4. He administers the oath to the judge advocate.

5. He authenticates by his signature, all acts, orders and proceedings of the court requiring it.

6. He takes the proper steps to insure prompt trial and disposition of all charge referred to the court and keeps the court advised thereof.

Q. What are the duties of the judge advocate with regard to the accused prior to the assembling of the court for his trial?

A. 1. He should acquaint the accused with the accusations against him.

2. He should inform him of his right to have counsel, and arrange for the detail of counsel when one is desired by the accused.

3. He should inform him of his right to testify in his own behalf or to make a statement to the court.

4. He should furnish him with a copy of charges against him if so desired.

5. He may ask the prisoner how he intends to plead; but, when the accused is an enlisted man, he should in no case try to induce him to plead guilty or leave him to infer that if he does so his punishment will be lighter.

Q. When the accused decides to plead "Guilty," what are the duties of the judge advocate towards him?

A. 1. Advise him of his right to introduce evidence in explanation of his offence, and assist him in securing it.

3. During the trial he will see that the accused has full opportunity to interpose such pleas and make such defence as may best bring out the facts, the merits, or the extenuating circumstances of the case.

3. In so far as such action may be taken without prejudice to the accused, any advice given him by the judge advocate should be given or repeated in open court and noted on the record.

Q. What are the duties of a judge advocate with respect to the witnesses before the trial of a case begins?

A. He will summon the necessary witnesses, make a preliminary examination of those for the prosecution, and, as far as possible, systematize his plans for conducting the case.

Q. What are the duties of a judge advocate during the trial of a case?

A. 1. He conducts the case for the government and prepares the record.

2. He executes all the orders of the court.

3. He reads the convening order to the accused; swears the members of the court, the interpreter, the reporter and all witnesses.

4. He arraigns the accused; examines the witnesses.

5. He keeps or superintends the keeping of an accurate record of the proceedings and affixes his signature to each day's proceedings.

Book Review

Individual Instruction in Rifle Practice. By Captain A. J. McNab, 25th Infantry, Seattle (Washington): Banker's Printing Company, 1917. Pamphlet. Price, 25 cents.

This pamphlet is an expansion and improvement of a similar one previously furnished by the same author.

The results obtained by the author leave no grounds for questioning the correctness of his methods of teaching. He has proven conclusively that any man who can meet the physical requirements for enlistment can be taught to shoot well and that in one season. How does he do it? This is the question that every officer of infantry and cavalry should ask himself. It is this question that the author has attempted to answer and it appears that he has done it well.

Readers must bear in mind that the pamphlet merely points the way. It cannot take the place of personal instruction and individual effort. To quote the author: "There is no short cut to shooting efficiency. Hard work and lots of it on the part of the instructor is an absolute essential. This system is not automatic." . . . The instructor must satisfy himself that each man understands each and every point and can explain it in his own words.

The author discusses the various points which require attention and then furnishes a method of conveying to the mind of the soldier the point to be learned so that he will get the impression desired by the instructor.

In brief he tells what to do and how to do it.

The book should be in the hands of all those who are interested in the use of the rifle.

THE UNITED STATES INFANTRY ASSOCIATION

"The object of the Association shall be to promote the efficiency of the Infantry arm of the military service of our country by maintaining its best standards and traditions, by fostering esprit de corps, by the dissemination of professional knowledge, and by the exchange of ideas as to the utilization of such knowledge with particular reference to the rôle of Infantry in modern war."—Article III of the Constitution.

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RULES.

For rules governing the competition see July-August, 1916, number of the INFANTRY JOURNAL.

New Members.

Appleton, Charles L., 2d Lieutenant, Officers' Reserve Corps.

Birmingham, R. C., 1st Lieutenant, 18th U. S. Infantry.

Brantigan, Edward, formerly Captain, Pennsylvania National Guard.

Breckinridge, C. R., Jr., 2d Lieutenant, Officers' Reserve Corps.

Burke, Donald J., 2d Lieutenant, Officers' Reserve Corps.

Buxton, L. Edward, Jr., Major, Infantry, Officers' Reserve Corps.

Campbell, George W., formerly 2d Lieutenant, Pennsylvania National Guard.

Carlstrom, Oscar E., Captain, 6th Infantry, Illinois National Guard.

Clark, F. S., Captain, Coast Artillery Corps.

Coffin, William E., Jr., 1st Lieutenant, 4th U. S. Infantry.

Crooks, Charles M., 2d Lieutenant, 25th U. S. Infantry.

Cutchin, Whitfield, 2d Lieutenant, 1st U. S. Infantry.

Ellis, Arthur M., 1st Lieutenant, 12th U. S. Infantry.

Fitch, Thomas W., Jr., Captain, Infantry, Officers' Reserve Corps.

Fluegel, Alexander W., Captain, 3d Infantry, Wisconsin National Guard.

Gibbs, Harry E., 1st Lieutenant, Infantry, Officers' Reserve Corps.

Grout, Reginald D., 2d Lieutenant, Infantry, Officers' Reserve Corps.

Guilford, Edward F., 2d Lieutenant, Infantry, Officers' Reserve Corps.

Hall, H. F., Captain, 6th Infantry, Illinois National Guard.

Hayward, William, Colonel, New York National Guard.

Hinton, George F., Captain, New York National Guard.

Holmes, John M., 1st Lieutenant, M. G. Company, Missouri National Guard.

Houghland, H. J., Lieutenant, Officers' Reserve Corps.

Inglis, Fred B., 1st Lieutenant, 18th U. S. Infantry.

Jay, Delancey K., Captain, Officers' Reserve Corps.

Josephs, Lyman E., Jr., Officers' Reserve Corps.

Kemmerer, Jerome E., 2d Lieutenant, Officers' Reserve Corps.

Landrum, Eugene M., 2d Lieutenant, 20th U. S. Infantry.

McClure, Walter R., Lieutenant, Officers' Reserve Corps.

McDermott, J. A., 1st Lieutenant, 18th U. S. Infantry.

McGarrigle, Charles A., 2d Lieutenant, 2d U. S. Infantry.

Olyphant, J. K., Jr., 1st Lieutenant, Officers' Reserve Corps.

Onthank, A. Heath, Lieutenant, Officers' Reserve Corps.

Reig, John W., Lieutenant-Colonel, 6th Infantry, Illinois National Guard.

Robertson, John, Major, 18th U. S. Infantry.

Roosevelt, Theodore, Jr., Major, Infantry, Officers' Reserve Corps.

Starr, Arthur B., Jr., 1st Lieutenant, Infantry Officers' Reserve Corps.

Smith, Emmett W., 1st Lieutenant, 18th U. S. Infantry.

Stearns, Marshall, Captain, Officers' Reserve Corps.

Stull, E. E., Captain, Illinois National Guard.

Teachout, George W., 2d Lieutenant, 29th U. S. Infantry.

Townshend, Orval P., Lieutenant-Colonel, Porto Rico Regiment, Infantry.

Vaughan, H., 2d Lieutenant, Officers' Reserve Corps.

Wahl, Frank, Captain, 6th Infantry, Illinois National Guard.

White, John C., Captain, Infantry, Officers' Reserve Corps.

Woodruff, R. B., Lieutenant, 9th U. S. Infantry.

Young, B. A., 1st Lieutenant, 3d U. S. Infantry.

Infantry Journal Advertiser

GENTLE HINTS
No. 27.

WASHINGTON, D. C.
MARCH 1, 1917.

1. It is with considerable satisfaction that we invite attention to our growing list of new members.

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